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TRANSACTIONS

OF THE

MEDICAL AND PHYSICAL SOCIETY

OF

BOMBAY.

No. I.—NEW SERIES.

FOR THE YEARS 1851 & 1852.

Bombay:

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Secretary.

To - H. Coote Esqr
Hon. Secretary -

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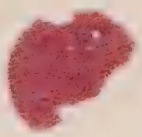

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REPORT

UPON THE

CASES OF TETANUS IN THE JAMSETJEE JEJEEBHOY HOSPITAL, FROM JANUARY 1845 TO DECEMBER 1851.

BY J. PEET, Esq.,

Professor of Surgery in the Grant Medical College, and Assistant Surgeon to the Jamsetjee Jejeebhoy Hospital.

Presented by the Grant College Medical Society, March 1852.*

The subject of Tetanus is one upon which, perhaps, as many facts are recorded as upon those more common diseases in regard to which little additional information is thought to be necessary. Almost every occurrence of this disease is deemed worthy of being detailed to the profession,—the medical journals and other less ephemeral works teem with cases; and, indeed, scarcely a week passes in which the subject is altogether unnoticed. It, nevertheless, but rarely falls to the lot of any individual to witness more than a limited number of examples; and it may be questioned whether all the information can be obtained from the consideration of isolated cases, which they are calculated to afford when collected and grouped together. In the Jamsetjee Jejeebhoy Hospital, to which I have been attached for the last seven years, a larger number of cases of Tetanus are probably annually admitted than in any other hospital in the world; and although I have little to offer in the way of improvement in the treatment,

* This Report was prepared for the Grant College Medical Society, and read before a meeting of that Society by its President, Mr. Peet, immediately before his departure from India on sick leave. It has been presented by the Grant College Medical Society to the Medical and Physical Society, and is printed during the absence of its author.—*Secretary.*

I cannot but think the arrangement and analysis of these cases will elicit some points of interest.

From the year 1845 to 1851, a period of seven years, 195* cases of tetanus have been received into the hospital. Of this number 145 have terminated fatally, being a per-centage of 74·3. The total hospital admissions during the same period have been 26,719.

Varieties.—Of the admissions from tetanus, 120 cases were entered *traumatic,* and 75 *idiopathic ;* that is to say, local irritation of some kind was present in the former cases, whilst it was not so in the latter.

Relative frequency of the two forms.—The disproportion in the relative number of admissions of the two forms is by no means so great as might have been expected from a reference to the records of the disease to be found in most works. Out of 195 cases there is only an excess of 45 in favour of the *traumatic* variety, but it may be doubted whether the disproportion is *even* so great as here stated. When we consider that, as a general rule, all cases in which there was local irritation, however slight, were entered as *traumatic,* it may be safely presumed that in every instance the local affection and the disease did not bear the relation of cause and effect. In illustration of this remark I would refer to some of the cases held to have been occasioned by the irritation of guinea-worms, and entered as traumatic in the hospital returns. In certain seasons of the year in Bombay, as is well known, guinea-worm is extremely prevalent, and it is consequently reasonable to infer that in some of the cases, in which it has been viewed as the exciting cause of the disease, its presence was merely coincidental.†

* These are altogether exclusive of the cases of persons attacked in the hospital, whilst suffering from other diseases or injury. Within the period embraced in this Report, at the lowest computation, from 70 to 80 persons have been seized with the disease subsequent to their admission. It would not, I think, be beyond the mark, to state the total number of cases treated at about 260. By an examination of the records in the Medical Board Office, it appears that two cases only in the European regiments of the Presidency, and five cases only in the European General Hospital, have been treated during the seven years comprised in this Report, viz. from January 1845 to December 1851.

† We should not, however, lose sight of the fact, that of persons meeting with

Comparative mortality of the two forms.—The relative mortality of the two forms, however, affords a still more striking contrast to the statements of most systematic writers. The mild and tractable nature of the idiopathic variety, so generally adverted to, has not been observed. Thus, of 75 admissions for *idiopathic* tetanus, there were 57 deaths—a per-centage of 76. Of 120 admissions for *traumatic* tetanus, there were 87 deaths—a per-centage of 72·7. It thus appears that the idiopathic form is the more severe and fatal.

But the mortality of the traumatic form is, I think, over-stated. Of the deaths some were, I have little doubt, for reasons before mentioned, erroneously placed under this head, and should rather have been classed as idiopathic. We are, perhaps, at all times too ready to ascribe to the presence of slight degrees of local irritation an influence in the production of tetanus, which, in reality, they do not always exert. In every case the first inquiry has reference to a cause, and if an abrasion, a scratch, a small ulcer, or an abscess, should be present, it is at once set down as the cause of the disease. On the other hand, there is little doubt that in countries where hysteria is common, cases of recovery from idiopathic tetanus are recorded, when, in fact, they were recoveries from the former malady.

Season of admission.—The following have been the admissions of both forms, during each month, in the order of their greatest frequency :—

December.....	24
November.....	19
May.....	19
February.....	19
March.....	17
April.....	17
June.....	16

injuries liable to be followed by tetanus, a considerable number are admitted into the hospital at the time of the injury. Should tetanus follow, it has not been the practice to change the heading under which they were first entered, consequently such cases do not appear in the above list. But, with every deduction on this account, the greater comparative frequency of *idiopathic* tetanus in this country cannot, I think, be disputed.

October	16
September	13
August	12
July	12
January	11
Total	195

It will be thus seen that the largest number of cases were admitted in the month of December; the excess, however, is not sufficiently great to be worthy of much notice.

Idiopathic form.—When, however, we separate the two forms, the small number of admissions of idiopathic tetanus during the monsoon months, viz. July, August, and September, is very striking. During these three months, taking the seven years together, the admissions were—

September	1
July	2
August	4
Total	7

In the three following months, viz. October, November, and December, the admissions were—

October	8
November	11
December	11
Total	30

The months most remarkable for the largest number of admissions are those last noticed, viz. October, November, and December. In these three months the admissions were nearly half of the total number of cases admitted during the year. At this season in Bombay the alternations of temperature are greater than at any other period, owing to the cold land winds which set in during the night.

Traumatic variety.—Of the traumatic form, on the other hand, the admissions were most frequent in the hot months, viz. April, May, and June, but the excess is not nearly so striking

as that of the admissions of *idiopathic* tetanus during the cold months.

Mortality of both forms.—If we divide the year into quarters, the mortality will appear thus :—

	Admissions.	Deaths.	Per-centage.
1st Quarter.....	47	30	63·8
2nd „	52	38	73·0
3rd „	37	30	81·0
4th „	59	47	79·0
	195	145	74·3

It appears, therefore, that the greatest mortality occurred during the 3rd quarter, or in the months of July, August, and September.

Occupations.—The occupations of the persons attacked are only recorded for the last six years, the admissions for the year 1845 are, therefore, excluded. Without pretending to perfect accuracy, the following list is given :—

Coolies or Labourers ...	43
Domestic Servants.....	14
Biggaries, Coolies.....	16
Buggy-drivers.....	7
Cooks.....	7
Grooms.....	6
Sailors	6
Weavers	4
Rope-makers.....	2
Peons	6
Baker	1
Shopkeepers	2
Sawyer.....	1
Bookbinder.....	1
Painter.....	1
Carpenters.....	4
Oil-pressers.....	1
Butler.....	1
Barber.....	1

Engineer Apprentice	1
Butcher	1
Coachman	1
Horse-jockey.....	1
Bheestie, or Waterman ..	1
Mussaul	1
Silk-cleaner	1
Hamalls.....	3
Shoe-makers.....	3

Sexes.—The absolute number of females admitted with this disease has been small, but, proportionably to the general hospital admissions of female patients, it has been very considerable.*

The ages of persons admitted have been as follows, extending over a period of six years :—

Between	5	and	9	years.... 6	cases.
„	9		15	„ 12	„
„	15		25	„ 46	„
„	25		35	„ 63	„
„	35		45	„ 30	„
„	45		55	„ 3	„
„	55		65	„ 6	„
				166	cases.

Castes.—With reference to caste, the admissions and deaths have been as follows, exclusive of the cases received into the hospital in the year 1845, during a part of which year there are no records of castes :—

	Admissions.	Deaths.	Per-centage.
Hindoos	95	64	67·1
Mussulmans..	54	46	85·2†
Christians.....	21	13	61·9
Parsees....	12	5	41·6

* Comparatively few female patients are treated in the Jamsetjee Jejeebhoy Hospital : the total number of admissions during the year does not exceed 600.

† It thus appears that the greatest mortality was amongst the caste of Mussulmen. The numbers are too small to be deserving of much importance being attached to this circumstance. I think it right, however, to mention, that it accords with the impression left on my mind by observation of the disease.

The total number of hospital admissions during the four years from 1848 to 1851, as regards caste, have been as follows:—

Hindoos, 5,817; Mussulmans, 4,919; Christians, 2,733; Parsees, 1,193.*

Causes.—The kind of injury, or degree of local irritation, to which the traumatic form was attributed, has presented the greatest possible variety. The disease has followed wounds of almost every description, from a simple abrasion, to the wound left after amputation of the thigh. As an illustration of this, I would refer to the cases admitted during the year 1847—they were as follows:—

Six cases were attributed to abscesses or ulcers of the feet, caused by the irritation of guinea-worms.

One to a small wound of the right temple.

One to a severe injury of the index finger, with exposure of bone.

One to the ear having been bored, as a cure for swelled testicle.†

One to the second and last phalanges of the little toe having been knocked off by a piece of wood falling upon it.

One to an abscess beneath the jaw.

One case occurred eight days after parturition.

One to a wound of the sole of the foot, but which had healed at the time the symptoms came on.

One case occurred six weeks after small-pox.

One after amputation of arm, performed for traumatic gangrene.

From an examination of eighty fatal cases, selected indiscriminately, excluding those of the year 1847 just noticed, the causes appear as follows:—

Contused wounds, 16: 1 of the face, 3 of the fingers, 1 of the toes, 5 of the leg, 4 of the scalp, 1 of the thigh, and 1 of the foot.

Punctured wounds, 1, of the toe.

* During the year 1847 no record of castes was kept, but the admissions for four years will give a fair idea of the relative numbers treated during the whole period.

† Tetanus has been frequently observed in lambs, produced by boring the ears. "I have often," says Dr. Parry, "seen lambs, whose ears, for the purpose of marking them, have been bored with a red hot iron to mar the root, so rigid all over with tetanus, alternating with convulsions, that their bodies would project in a right line with their hind legs when one held them out horizontally by the hind feet."—*Cyclopædia of Medicine*, p. 671.

Ulcers of the feet and legs	3	cases.
Leprous ulcers	1	case.
Abortion	1	„
Amputation of arm	1	„
„ of thigh	1	„
Fracture, simple, of thigh	1	„
„ compound and comminuted, of leg	1	„
„ „ „ of toes	3	cases.
Eschar on the back of the hand, from the application of marking-nut	1	case.
Guinea-worm	12	cases.
Exposure to cold	7	„

In the remaining cases no cause whatever could be traced.

Although direct exposure to cold is not traceable in many cases of idiopathic tetanus, the fact of the much greater relative frequency of the disease at the period of the year during which the cold land winds prevail, is satisfactory evidence that alternations of temperature are closely concerned in its production. This accords with the opinion expressed by almost all writers upon the subject. It has been but rarely that the disease has attacked persons after the performance of surgical operations, three cases only having thus occurred during the seven years embraced in this report. In all these cases the operation was the same, viz. amputation; and it is, perhaps, a remarkable circumstance, that the condition of the limb which led to its adoption was very similar in the three cases, viz. *gangrene from injury*.

These three cases are, perhaps, sufficiently interesting to merit a brief notice.

1. Myramjee, aged 40 years, a Hindoo, shopkeeper, was admitted into the Jamsetjee Jejeebhoy Hospital on the 22nd May 1847, having received a severe contusion of the heel, from a stone falling upon it. The injury was followed by gangrene, involving the foot, and spreading upwards along the leg. He would not at first submit to amputation; when he *did* consent the gangrene had reached so high that it was necessary to remove the limb above the knee. Amputation was performed by anterior and posterior flaps, five days after admission; there was much

collapse for some hours subsequent to the operation, but reaction gradually came on: at 12 o'clock at night he was attacked with tetanus, and died in thirty-six hours.

2. Ghopee, a Mussulman girl, 9 years of age, was admitted into the Jamsetjee Jejeebhoy Hospital on the 10th February 1848. It was stated that about three weeks before, she fell and fractured the right arm. The injury was treated by a native hakim, who bound up the limb in the manner which is usual amongst native practitioners; much swelling followed, and afterwards the limb became cold and insensible. On admission the whole of the fore-arm, and a considerable part of the arm, were in a state of gangrene, a line of separation having formed about the middle of the latter; much of the soft parts had been thrown off, the bones of the fore-arm being in several places bare.

The limb was amputated a little below the shoulder joint. Forty-eight hours after the operation she was seized with tetanus. The result is not known with certainty, as her friends insisted upon removing her from the hospital.

3. Fatima, a woman of the Mussulman caste, was admitted into the Jamsetjee Jejeebhoy Hospital at 4 o'clock on the afternoon of the 9th January 1848. The left fore-arm, and the lower part of the arm, were in a state of gangrene through the whole thickness of the soft parts; a line of separation was tolerably distinct a little above the condyles. She stated that thirteen days before her admission she fell, and, from her description, the bones of the fore-arm would seem to have been broken. Bandages and splints were applied by a native practitioner; great swelling followed, and the limb became gangrenous: amputation was performed at the time of admission.

On the following day she was easy, and had passed a good night; but in the evening there was some heat of the stump, with redness of the skin towards the axilla. About 8 o'clock she sent for the Apothecary, and complained of general rigidity of the muscles, and then said she had felt some pain and difficulty in opening the mouth during the greater part of the day. On the following morning the tetanic symptoms were all well marked, and severe. She died in a paroxysm of spasms sixty-five hours

after the operation, and forty-five hours after the first tetanic symptom was noticed.*

In these three cases the interesting question presents itself, as to whether the tetanus was due to the wound of the amputation, or to the state of the limb for which the operation was performed? If it should be attributed to the operation, it is impossible to overlook the early period of its accession; in one case ten, in another twenty, hours only elapsed before the first symptom appeared. In the third case the period stated is longer,—forty-eight hours,—but this patient being a child, it is possible the symptoms may have existed for some hours before they were brought to notice.

The cases treated in the Jamsetjee Jejeebhoy Hospital would lead to the belief that the interval between the receipt of injury and the occurrence of the disease is much more considerable: thus, of 28 cases, in which the number of days is mentioned—

In 5	the interval	was	6	days.
4	,,	,,	4	,,
3	,,	,,	10	,,
3	,,	,,	16	,,
3	,,	,,	5	,,
3	,,	,,	7	,,
1	,,	,,	20	,,
1	,,	,,	2	,,
1	,,	,,	8	,,
1	,,	,,	30	,,
1	,,	,,	9	,,
1	,,	,,	12	,,
1	,,	,,	24	,,
Total....28				

* Since Mr. Peet's paper was written, another case of the same nature has occurred. Babajee Gunnoo, a Maratha labourer, 25 years of age, was admitted on the 3rd April 1852, with a compound and comminuted fracture of the lower end of the left radius, which communicated with the wrist joint. On the 6th the wound was sloughy; on the 7th the fore-arm and the elbow were in a state of gangrene. Amputation was immediately performed by Mr. Sub-Assistant Surgeon Lisboa, just below the shoulder joint. The stump was going on well, but on the 12th tetanic symptoms came on, and death took place on the 15th.—*Secretary.*

From this list it appears that two days were the shortest period, and this only occurred in one case.* The average period was five and a half days.

Considering, therefore, the very short time that elapsed between the performance of the operation and the accession of the disease, the fact, also, that the condition of the limb was nearly the same in the three cases, and that these are the only instances in which tetanus has followed any surgical operation in the hospital, the conviction in my mind is very strong that the original injury, and not the operation, should be viewed as the cause of the tetanic symptoms. If this opinion should be correct, it must be admitted that these cases bear very strongly against the propriety of having recourse to amputation as a means of cure. But connected with them there is another question of much interest—are they not calculated to favour the idea that there is in this disease, as in most others, a period of incubation—a stage during which the efficient cause, or, more correctly, perhaps, the disease itself, is actually in existence, without its presence being manifested by any appreciable signs or symptoms?

Condition of the wound.—I have at all times been anxious to ascertain whether there is any one state of the wound more frequently than another followed by tetanus. A careful examination of a large number of cases has led me to determine this question in the negative. There can be no doubt that the disease occurs very frequently after contused wounds—wounds so much bruised as to render it necessary that a slough should separate before they can heal; but it has seemed to me that symptoms come on, in about an equal number of cases, both before and after its separation. The irritable state of the surface of wounds, so generally mentioned as being often present, has not been observed with sufficient uniformity to justify its being considered as more than an accidental occurrence.

* In the class of persons who resort to hospitals in this country, little dependence should be placed upon any statement they may make in regard to time; I am not prepared, therefore, to give any tabular view of the period which elapsed between the receipt of the wound and the accession of the disease in all the cases. I have, however, little doubt, that in many cases the period was longer than the limit assigned by Sir James McGrigor and Baron Larry, viz. 22 and 15 days.

Situation of the wound.—Neither have I been able to satisfy myself that there is much in the situation of the injury as regards the probability or otherwise of the accession of the disease. More cases of tetanus are, doubtless, connected with injuries of the extremities than with those of either the trunk, head, or neck; but not, perhaps, to a greater extent than may be explained by the comparative frequency of the former injuries.

Other causes besides wounds.—It would appear, however, that local irritation, independent of external injury, is by no means a rare cause of the disease. The number of cases apparently occasioned by small abscesses, ulcers, &c., has at all times excited remark. We have also had examples of tetanus dependent, apparently, upon ligature of the umbilical cord, and in a few cases it has followed abortion and parturition.

I have not been able to satisfy myself of the importance which should be attached to the presence of worms in the intestinal canal: MM. Laurent and Lombard have stated their belief that there is a very close connection between the disease and the existence of these entozoa.* Keeping in view the general prevalence of intestinal worms in the natives of this country, this is a point which may, perhaps, be deserving of further investigation.

The severity of the symptoms bears no relation to the degree of local injury.—The experience of the cases treated is quite in accordance with the statements of most authors—that the violence of tetanus is no way dependent upon the degree of local irritation. The disease has sometimes been unusually rapid in its progress to a fatal termination, in instances where its exciting cause was a small abscess, an ulcer, or a mere abrasion of the skin. On the other hand, there have been recoveries in cases where the local injury was extremely severe.

Closure of the jaw.—Neither is there, so far as I have observed, any relation between the severity of the disease and the degree of closure of the mouth. In some of the worst cases the mouth could be opened sufficiently wide to admit of the introduction of one or more fingers, whilst, in comparatively mild cases, it has not unfrequently been almost closed.

* *Watson's Lectures*, vol. i., p. 576.

Symptoms of the disease.—From the number of persons attacked with tetanus in the hospital, there have been good opportunities of tracing the symptoms from their commencement. I do not think there has been, at first, the marked difference between the acute and chronic forms that might have been expected from the recorded history of the disease: it has been in many instances almost impossible to distinguish those cases which have rapidly run on to a fatal termination from others which, after proceeding slowly, have ultimately recovered.

The mode of commencement of the disease has presented a good deal of variety. In a certain number of cases the manifestation of muscular derangement has been preceded by distinct febrile symptoms, not attributable to the state of the wound: these have reached over a period varying from a few hours to two days. I was at one time under the impression that such cases were invariably *acute*, but further experience has thrown a doubt upon the accuracy of this opinion. Within the last two years I have witnessed at least three cases of recovery where the premonitory febrile disturbance was distinctly marked.

Febrile symptoms at or previous to the accession of the tetanic symptoms have, however, been by no means general: in the larger number of cases they were altogether absent. In such cases the first symptom usually noticed has been pain and stiffness of the muscles of the neck, jaw, or throat; but, even before pain is complained of, there is often something very peculiar in the expression of the face: it is not easy, perhaps, to describe exactly in what this change consists,—it has seemed to me to depend upon an apparent increase in breadth, the angles of the mouth being, in some degree, drawn outwards, the lips compressed, and the eyelids slightly corrugated. This expression is very different from that present at a later period, in which the skin is wrinkled, the furrows of the face highly developed, the angles of the mouth depressed, and the whole appearance that which has been so well designated by the term "*risus sardonicus*." The length of time over which the change in the expression of face first noticed may extend I am unable to state: I have witnessed and pointed

it out ten hours before any other symptom of tetanus was present.*

The rigidity of the muscles of mastication is soon followed by a similar condition of those of the abdomen, and by paroxysms of spasms, more or less frequent.

Progress.—The progress, after the symptoms have been established, has not been at all uniform. In some instances death occurred during a violent paroxysm of spasms a few hours after the accession of the disease; in other instances life was prolonged to many days, or even weeks.

Thus, in 81 fatal cases, selected indiscriminately, the period at which death took place was as follows :—

Days.	Cases.
1	3
2	9
2½	1
3	6
3½	1
4	12
4½	1
5	10
5½	1
6	9
7	5
8	7
9	3
10	1
11	1
13	2
13½	1
14	1
16	1
18	1
19	1

* I do not think the spasmodic contraction of the muscles which causes this altered expression is productive of pain, nor have I seen perfect relaxation excepting when the patient was under the full influence of ether or chloroform.

Days.		Cases.
21	.....	1
28	.....	2
39	.....	1

The statement usually made, that "instances" of a fatal termination after the lapse of a single week are extremely rare, is not quite confirmed by the experience of the Jamsetjee Jejeebhoy Hospital. There have been a considerable number of cases in which life was prolonged longer than this period, the result being unfavourable.

Individual symptoms.—Pulse.—In forming an opinion of the severity of the attack, very little reliance can be placed on the state of the pulse. The observation of Dr. Parry, so frequently quoted, that "if the pulse by the fourth or fifth day does not reach 100 or 110 beats in the minute, the patient almost always recovers," is altogether disproved by the experience of tetanus as it occurs in Bombay. Many instances have been noticed where there was but little alteration in the frequency of the pulse up to the period of death; whilst, on the other hand, recovery has taken place in cases where the pulse was more than 100 from the commencement. There is, I think, no one symptom subject to so much variety in different cases as the pulse is with respect to number. A loss of power in the pulse, however, is very general, even at an early period, and I cannot think sufficient prominence has been given to this symptom as evidence of the debility and exhaustion which even a few hours are sufficient to produce. Whether this debility be the result of the sedative influence of the disease upon the action of the heart, or whether it be attributable to the waste of organized material, consequent upon the violent muscular contractions, is, perhaps, a subject for speculation: probably it should be ascribed, in some degree, to both these influences. In whatever way occasioned, it has not, I think, received that attention which its importance deserves. That it is closely related to the unfavourable termination of this disease does not admit of doubt; and much of the success in the adoption of curative measures will, I am convinced, depend upon the extent to which it is kept in view in the treatment.

Respiration.—Quick and oppressed breathing has, at all times, proved a very serious symptom: sometimes the difficulty has arisen within the first few hours of the attack; at others several days have elapsed before it has been observed;—at whatever period it may occur, it is, I think, the most unfavourable of all the symptoms.

Digestive organs.—It is not often that the tongue is much furred, and the appetite is frequently good; constipation of the bowels is well known to be almost invariably present, but I would attribute this less to torpidity, or derangement of the intestinal canal, than to the mechanical obstruction offered by the spasmodic contraction of the sphincter muscle.

Muscular system.—The earliest indication of the disease in the muscular system is seen in the muscles of the face, giving rise to the peculiar expression which has been already noticed; the muscles of the neck and of mastication are very soon afterwards attacked, and then those of the abdomen. The tonic spasm, I believe, in general precedes the other variety of muscular contraction, and, in the abdominal muscles, the muscles of the jaw, and in those of the neck, continues throughout the whole course of the seizure. The severity of the clonic spasms, that is the violence of the paroxysms of spasms, is not always an indication of the danger to be apprehended—much more depends upon the number and class of muscles affected. In some cases the paroxysms, though short and not severe, are yet general, scarcely any of the voluntary muscles, if we except those of the feet and hands, being free. To a casual observer the severity of such cases is not apparent. There is not at first sight evidence of that dreadful suffering which is present in other cases; yet this, according to my experience, is one of the most dangerous forms of tetanus, few persons thus attacked surviving the third day. In another class of cases, particular sets of muscles are inplicated, and to those the spasms are in a measure confined. The muscles concerned in the function of respiration are sometimes the seat of the spasms, whilst there may be few spasms elsewhere. With the exception of hurried breathing, there are, in these cases, few external signs of the severity of the attacks, yet

the fatal termination is seldom prolonged more than a few hours.

The presence of opisthotonos, though alarming to appearance, is, I think, rather favourable than otherwise, as it is a proof that all the muscles are not contracting with equal violence.

In a certain class of cases the muscles of deglutition have been severely affected from the commencement of the attack, and this is a very serious complication, as it precludes the possibility of administering nourishment—a measure so urgently required. Few, if any, cases have recovered in which dysphagia was well marked.

Nervous system.—In very few of the cases has there been any derangement of the mental powers, the patient, for the most part, remaining quite sensible up to the period of death. In *two* cases, one treated by the inhalation of the vapour of chloroform, the other by large doses of the extract of belladonna, the fatal termination was preceded by a state of insensibility, lasting over several hours.

I have occasionally observed partial paralysis of the face in cases of traumatic tetanus; two instances of this complication have been treated in the clinical ward of the Jamsetjee Jejeebhoy Hospital.

Diagnosis.—There has never been the least difficulty in the diagnosis of tetanus, and no case treated has borne a resemblance to hydrophobia.

From a reference to the disease as it has presented itself in the Jamsetjee Jejeebhoy Hospital, it seems almost difficult to understand how there could have been any danger of comfounding the two affections.* Between some forms of hysteria and tetanus there is, probably, a greater resemblance, but the cases now commented upon do not present examples.

Prognosis.—Whilst the experience of the cases under notice confirms the opinions of all observers as to the serious nature of the disease, there are some points on which it differs in a remark-

* "Sometimes it (dysphagia) even inspires him with a dread of the sight of water, and a great resemblance to hydrophobia is produced."—*Cooper's Dictionary.*

able degree. Perhaps the chief of these has reference to the mortality from the idiopathic form of tetanus. Almost all writers dwell upon the comparatively mild nature of this variety.

That the "idiopathic disease is a far milder and more tractable affection is a fact well known to every planter in the West Indies, who never considers his negroes as safe when the disease supervenes on a wound, but is frequently successful in alleviating the idiopathic species."*

Watson,† Symonds,‡ Cooper,‖ and, indeed, almost all surgical writers, have borne witness to the less severe nature of the idiopathic form, and this not only of the disease as it presents itself in temperate climates, but also in an equal degree as it has been observed in tropical countries. With the view of illustrating the progress and symptoms of this variety as it occurs in Bombay, I subjoin summaries of a few cases.

1. Jokin de Silva, age 25, a native of Macao, was admitted into the Jamsetjee Jejeebhoy Hospital on the 24th October 1849. He was a man of stout habit of body, had generally enjoyed good health, and had led a seafaring life from his boyhood; was believed to be accustomed to the habitual use of spirits, though not to excess. Three days before admission he slept on the deck of a ship, exposed to the night air, and to this he attributed his illness: had previously been quite well; was free from any wound, abrasion, ulcer, or local irritation of any kind. The first symptom noticed was some pain about the neck; this was followed by difficulty in opening the mouth. On admission, the muscles of the abdomen were tense and rigid; there was almost complete trismus; and there were frequent paroxysms of spasms, but they were not severe; pulse 108; bowels confined. The tincture of hemp, in 20 minim doses, was given every third

* Vide review of a work in the *Edinburgh Medical and Surgical Journal* on the treatment of tetanus and hydrophobia, by Robert Reid, M.D. It is but right to state that the author of the work which is the subject of review asserts that idiopathic tetanus is a disease "which generally runs through its course with the utmost expedition."

† *Practice of Physic*, vol. i. p. 552.

‡ *Cyclopædia of Medicine*, Article Tetanus.

‖ *First Lines*, p. 200.

hour, and on the 26th October he was removed to the clinical ward. The following statement of his condition is abridged from the note taken by one of my dressers, Mr. Gomes, now a Sub-Assistant Surgeon:—The muscles of the trunk and neck are more or less rigid, and at intervals spasmodically contracted, the paroxysms recurring every second or third minute; the mouth is almost closed; the muscles of the anterior part of the body are the most violently affected, producing a state of emprosthotonos—one paroxysm was so severe that the patient was thrown out of bed. The tetanic expression of the face is not well marked: the right angle of the mouth seems drawn to the right side, and he had some difficulty in articulation; skin of the trunk slightly above the natural heat; face and neck covered with dewy perspiration; bowels constipated; breathing rather frequent, and oppressed; he was cupped to ℥iv on the nucha; a purgative of castor oil and turpentine was administered, and ʒj of chloroform was ordered to be inhaled every second hour; a nutritious diet was directed. The chloroform was inhaled six times; after each inhalation he was rendered insensible for ten minutes or a quarter of an hour, during which time there was slight relaxation of the muscles; but the paroxysms of spasms returned as soon as the state of insensibility went off. In the course of the night the breathing became more oppressed, and he died in a paroxysm of spasms at 7 o'clock the following morning.

Inspection three hours after death.—Head.—On removing the scalp, a quantity of dark venous blood oozed out from the vessels of the scalp; the vessels of the dura mater were generally turgid, and the sinuses contained more than the usual quantity of (coagulated) blood; there was considerable serous effusion into the subarachnoid space, chiefly at the back part, and about an ounce at the base. The substance of the brain was generally healthy and firm, with about the usual number of red points visible in the hemispheres on incision; in the lateral and third ventricles the quantity of fluid was as usual; the left thalamus opticus was, perhaps, a little less consistent than the right, but the appearance was by no means marked; the pons and the medulla were free from all trace of disease; there was slight vascularity of the mem-

branes of the chord, but no fluid within the theca. On making a section of the chord, at the upper part of the dorsal region, there was slightly increased vascularity of the grey substance: this was not the case in other parts of the chord that were examined. There was no softening of the texture of the chord—on the contrary, it appeared firmer than usual. It was not examined below the middle of the dorsal region.

Chest.—The lungs collapsed freely; their structure was soft and crepitating; no more than the usual quantity of fluid was found in the pericardium; the right side of the heart was distended with blood; the structure of the heart was healthy.

Abdomen.—The liver was rather large, evidently from congestion of blood, which oozed out copiously on making an incision into it; the surface was dotted red and yellow; the kidneys were of ordinary size, and apparently healthy in structure, but a good deal of blood oozed out from them on being incised; spleen healthy in size and structure. The stomach was contracted to the size of the intestines, and its mucous membrane extremely corrugated, but presenting no unhealthy appearance; the mucous membrane of the duodenum, and of the large intestines, was free from all morbid appearance; no intestinal worms met with, either in the stomach, duodenum, or large intestines. The rest of the track of the intestines was not laid open.

2. James Waddington, an Engineer Apprentice in the Dockyard, was admitted into the Jamsetjee Jejeebhoy Hospital on the 23rd September 1848. He stated that forty-eight hours previously his illness had come on, without any apparent cause, and rapidly increased. On admission there was trismus, with rigidity of abdomen, and opisthotonos.

Pulse but little affected; surface of natural temperature. He was ordered a purgative of calomel and jalap, and tincture of hemp in 20 minim doses, every third hour. On the following day the symptoms were more urgent; pulse quick; surface bathed in cold perspiration; and he was unable to swallow. He died at 5 o'clock in the evening.

This case was treated by Dr. Giraud, of whose report the above is an abstract.

3. Kasseem Bhaye, age 26, a Mussulman, in good flesh and condition, was admitted into the Jamsetjee Jejeebhoy Hospital on the 16th December 1848. On the preceding morning, after having been a good deal exposed to the night air, he was seized with tetanic symptoms. When brought to the hospital there was general rigidity of the muscles, with occasional paroxysms of spasms; trismus almost complete; skin above the natural heat; pulse frequent; bowels free. A purgative of calomel and jalap was given, afterwards extract of hemp, with quinine in full doses. There was no improvement. He died three days after admission.

These three cases will afford some idea of the symptoms and progress of idiopathic tetanus. With the view of adding still further information upon this form of the disease, I have arranged twenty-two cases in a tabular form. This, and a tabular synopsis of traumatic cases, are appended to this Report.

Morbid Anatomy.—I am afraid there is but little to record under this head. The *post-mortem* examinations have not been numerous, and nothing worthy of comment has been observed in the few that have been made.

Treatment.—The majority of the cases have been treated with preparations of hemp, but I am not sure that this medicine is at all superior to other narcotics. That it possesses any power of diminishing the violence of the spasmodic contractions which is not possessed by the preparations of opium, is, I think, very questionable. I make this statement after careful observation directed to this particular point. In some cases quinine has been given in large doses, as recommended by Dr. Bright, but not with any decided advantage.

A few of the earlier cases were treated on modified anti-phlogistic principles, (*i. e.* cupping over the spinal column, mercury, &c.) but I fear with the effect of hastening the fatal termination. A series of cases were treated with the extract of belladonna in large doses, but not with any success. The inhalation of ether and chloroform has been well tested. That it affords great, and for a time complete relief, there cannot be a question, but it has not appeared to have any influence in preventing, or even delaying, the fatal termination. The application of cold to the spine, by means

of ice retained in the gullet of an ox, as recommended by Dr. Todd, has been used in one case only: it certainly seemed of service, though the termination of the case was unfavourable.

It would be tedious to enumerate the various modes of treatment that have been adopted: the result has been nearly the same in each, namely that of leading to the conviction that there is no one mode of treatment better than another in the management of this disease. I would, however, except from this general statement the assiduous use of nutritious food. In any plan of treatment this should invariably be viewed as an essential element; and in many cases the favorable termination will, I am convinced, be more dependant upon it, than upon the medicines employed. The propriety of administering narcotics in large quantities seems to me very questionable. In cases where moderate doses have failed to afford relief, I have not witnessed benefit from increasing the doses to the extent often recommended,—on the contrary, there have been instances where, after resisting the action of the opiate altogether for a long period, whilst given in large doses, at short intervals, the patients have suddenly fallen into a state of partial insensibility, the violence of the spasms continuing unabated. In this condition it has appeared to me that the advance of the disease towards a fatal termination has been more rapid than in cases where opium has been less liberally employed. It is, perhaps, painful to reflect upon the little light which the largest experience has thrown upon the treatment of this and some other diseases of the nervous system: probably no decided advance can be made, until we have more definite knowledge of the nature of nervous influence, and of the exact condition of the nervous centres upon which the symptoms depend. Whether the acquisition of such information will be followed by the discovery of some means by which the lesion may be removed, or whether, as supposed by some, the extension of our knowledge of the immediate cause of the symptoms will "abridge the chances of finding a remedy," is a point upon which, perhaps, a difference of opinion may exist. However this may be, it is obviously very desirable that we should be in possession of more precise information as to the conditions of the

nervous centres,—not merely such information as can be obtained by ordinary inspection, but rather that which is to be procured by a series of carefully-conducted microscopic observations.

Upon the important subject to which I have just adverted, my observations are, I regret to say, very meagre: some member of the Society, more practised than myself in microscopic research, and having opportunities for carrying out such investigations, may, perhaps, be induced to take up the inquiry. It is undoubtedly one of interest, and may lead to much practical good.

Conclusions.—In conclusion, I would sum up the information afforded by the cases brought under your notice.

1st. That the idiopathic form of tetanus is much more frequent in Bombay than in other parts of the world, and that, contrary to the experience of the disease in other places, it is more severe and fatal than the traumatic species. 2nd. That it is often traceable to direct exposures at those seasons during which there are the greatest alternations of temperature. 3rd. That of the traumatic form many cases are ushered in by distinct febrile symptoms; but there is not sufficient reason to conclude that this constitutional disturbance is evidence of any more decided state of inflammatory action in the nervous centres than is present in cases where febrile symptoms are altogether absent. Nor would it appear that this febrile state is any indication of the severity or acute nature of the attack. 4th. That there is little doubt there exists in tetanus, as in most other diseases, a period of incubation, but there are no facts to determine the length of time over which this state may extend. 5th. That in many cases the more marked symptoms are preceded by a peculiar expression of face, to which sufficient prominence is not, perhaps, usually given, as a means of detecting the approach of the disease; and that this changed expression may exist for several hours before any other symptom of tetanus is present. 6th. That no reliance can be placed upon the frequency of the pulse as evidence of the severity or otherwise of the attack; but the condition of the pulse, in regard to strength, is of much importance. 7th. That hurried respiration and dysphagia almost invariably indicate a fatal termination.

Tabular Synopsis of Twenty-two

Name.	Age and Caste.	Occupation.	Residence.	Duration of Disease before Admission.	Date of Admission.
1. Ashew.....	25; Chinese.	Sailor.	On board ship.	Two days.	24th March 1848.
2. Madew	25; Hindoo.	Coolie.	Mazagaum.	Thirteen days.	7th Dec. 1847.
3. Gungajee	24; Hindoo.	Hamall.	Byculla.	Five days.	20th August 1847.
4. Bhawoo Sing.....	26; Hindoo.	Beggar.	Dongaree.	Two days.	13th April 1847.
5. John Delagur	67; Christian.	Pensioner, of the Naval Department.	Mandavee.	Two days.	31st Dec. 1847.
6. John Ame	32; Portuguese.	Carpenter.	Dhobee Tank.	Five days.	20th October 1848.
7. Munga	20; Hindoo.	Domestic Servant.	Mandavee.	Two days.	7th March 1848.
8. Allee	40; Mussulman.	Sailor.	Chuckla.	Six days.	2nd March 1848.
9. Younkee.....	36; Camattee.	Coolie.	Dhobee Tank.	Three days.	13th March 1848.
10. Jeeva Najwoo	Unknown.	Unknown.	Unknown.	Three days.	10th Nov. 1846.
11. Daveedeen	35; Purdasee.	Coolie.	Duncan Road.	Twelve days.	19th Dec. 1845.

ases of Idiopathic Tetanus.

Prominent Symptoms.	Treatment.	Result.	Cause.
nplete trismus; opisthotonos; lse frequent; had been bled fore admission.	Purgative enemata; Tinct. Cannabis & Tinct. Opii; inhalation of Chloroform.	*Death* three days after admission.	
host moribund; skin coldish; eathing oppressed.	Stimulants.	*Death* eight hours after admission.	No cause traced.
quent spasms, affecting extremities, trunk, jaw, and neck.	Purgatives, with Croton Oil; Hemp, combined with Calomel; inhalation of Ether; afterwards Morphia, Calomel, and Antimony.	*Death* four days after admission.	Had been exposed to wet; no other cause traced.
nplete trismus; spasms frent, with great restlessness.	Tinct. Cannabis.	*Death* a few hours after admission.	No cause traced; was an emaciated man.
mus; opisthotonos; pulse et; bowels free on admisn.	Tinct. Cannabis & Tinct. Opii; purgative injection.	*Death* three days after admission.	No distinct cause traced, but had been sleeping exposed to the night air on board ship.
sms very severe; trismus; se rapid and feeble.	Tinct. Cannabis & Tinct. Opii.	*Death* a few hours after admission.	Could not be traced to any cause; had fever for three days before the symptoms.
mus; opisthotonos; skin ural; pulse tranquil; bowels fined.	Purgatives, with Croton Oil; Tinct. Cannabis.	*Death* the day after admission.	No cause traceable.
mus; general rigidity of mus; no paroxysms of spasms.	Purgatives, with Croton Oil; Tinct. Cannabis.	*Death* seven days after admission.	Attributed to sleeping exposed to the night air.
ness of jaw; rigidity of abinal muscles; afterwards oxysms of spasms; dyspha-	Purgatives, with Croton Oil; Tinct. Cannabis; inhalation of Ether.	*Death* two days after admission.	No cause could be traced.
ressed breathing; general sms; complete closure of uth.	Purgatives, with Croton Oil, and Turpentine injections, &c.; cupping on the back; Calomel and Opium every second hour.	*Death* one day after admission.	No cause could be traced.
hotonos; pulse frequent; domen rigid.	Tinct. Cannabis purgatives, with Croton Oil.	*Death* sixteen days after admission.	No cause traceable.

Name.	Age and Caste.	Occupation.	Residence.	Duration of Disease before Admission.	Date of Admission.
12. Ramchunder	28; Hindoo.	Coolie.	Colaba.	Thirteen hours.	27th January 1851.
13. Bhowanee Dhurma.	26; Hindoo.	Mussaul.	Mattarpacary.	Three days.	17th Nov. 1851.
14. Poree Dhuramma..	35; Hindoo.	Coolie.	Cajee Moolla.	Four days.	2nd May 1851.
15. Chumbula	30; Hindoo.	Shoemaker.	Bhendy Bazar.	Seven days.	17th June 1851.
16. Punga	35; Hindoo.	Buggy-driver.	Bhendy Bazar.	Three days.	10th Dec. 1846.
17. Bajroo Gadiah....	35; Hindoo.	Coolie.	Girgaum.	Four days.	23rd April 1846.
18. Deen Mahomed ..	40; Mussulman.	Beggar.	Dhobee Tank.	Thirty-six hours.	1st January 1846.
19. Rungoo Chongla..	28; Mahratta.	Biggarie.	Unknown.	Attacked whilst in Hospital.	18th March 1846.
20. Dewjee Bajee	35; Mahratta.	Coolie.	Khetwaddee.	Thirteen days.	21st March 1846.
21. Seedee Ambun....	25; Mussulman.	Domestic Servant.	Parell.	Five days.	4th October 1846.
22. Chotee Khan ...	40; Mussulman.	Peon.	Bengal Poora.	Five days.	10th Oct. 1846.

Prominent Symptoms.	Treatment.	Result.	Cause.
neral rigidity of muscles; al-ost complete trismus; fre-ent short paroxysms of asms, chiefly of muscles of ck; breathing slightly hur-d; skin of natural heat; lse small, easily compressed.	Hemp; Quinine; nutri-tious diet.	*Death* three days after admission.	No cause traced.
asional spasms; mouth near-closed.	Tinct. Cannabis.	*Death* three days after admission.	No cause could be traced.
sms frequent, severe, and neral; trismus almost com-te; pulse frequent and t.	Tinct. Cannabis; purga-tives, with Croton Oil.	*Death* twenty-four hours after ad-mission.	No cause could be traced.
asional spasms; slight tris-us; rigidity of muscles of ck.	Tinct. Cannabis; nutri-tious diet.	Recovery.	No cause traced.
quent spasms of muscles of ck; rigidity of abdomen; lse frequent; partial closure mouth.	Tinct. Cannabis, in 40 minim doses, till well under its influence; no marked effect upon spasm, though he became drowsy.	*Death* the day after admission.	No cause traced.
uent tetanic spasms of mus-s of jaw and abdomen, with dity; pulse frequent and ble.	Tinct. Cannabis, in large doses; purgatives, with Croton Oil and Turpen-tine.	*Death* from ex-haustion, fifteen days after admis-sion.	No cause could be traced.
ms chiefly of muscles of terior part of body; mouth closed; can move the jaw ly.	Tinct. Cannabis.	*Death* a few hours after admission.	Had been sleeping exposed in a stable.
are of mouth; opisthotonos.	Tinct. and Ext. Cannabis.	*Death* one day after admission.	Unknown; no wound or ulcers.
culty in opening the mouth; eral tetanic spasms, with ch rigidity; pulse 130.	Warm bath; purgatives of Castor Oil & Turpen-tine; Tinct. Cannabis.	*Death* sixteen days after admission.	Unknown; no lo-cal affection of any kind.
uent paroxysms of spasms; dity of abdomen; partial ure of jaw; hurried breath-	Tinct. Cannabis; Croton Oil purgatives; Sina-pism to the epigastrium.	*Death* five days after admission.	No cause could be traced.
sional paroxysms of spasms; trismus; frequent pulse, rwards oppressed breathing; eral spasms; complete clo-of mouth.	Tinct. Cannabis, with Antimony and Nitric Ether; Sinapism to the epigastrium.	*Death* two days after admission.	No cause could be traced.

Tabular Synopsis of Sixty-one

Number.	Name.	Age & Sex.	Caste.	Native Country, and Residence in Bombay.	Duration of Disease before Admission.	Date of Admission.	Occupation	Prominent Symptoms.
1	Nabajee Rutna....	6; Male.	Hindoo.	Unknown; Small Colaba.	Attacked in Hospital.	21st Oct. 1846.	None.	Spasms, with rigidity of the muscles of throat and neck; afterwards partial closure of the mouth.
2	Baloo Buggett	25; Male.	Hindoo.	Unknown; Dungaree.	Four days.	10th Dec. 1846.	Hilkaree.	Partial closure of mouth; spasms frequent, not severe.
3	Shakee	5; Female.	Hindoo.	Unknown; Bhendy Bazaar.	Two days.	18th Dec. 1846.	None.	Trismus; spasms of muscles of neck; bowels confined; pulse not much affected; difficulty in swallowing.
4	Nagoo Rama.....	30; Male.	Hindoo.	Unknown; Karia Talao.	Twelve hours.	18th Jan. 1846.	Servant.	General spasms; pulse feeble; difficulty of swallowing.
5	Jokin Souza	8; Male.	European Portuguese.	Unknown; Dhobee Talao.	Four days.	3rd Feb. 1846.	None.	General spasms very severe; difficulty of swallowing; partial closure of mouth; febrile heat; frequent small pulse.
6	Chimnea Ramswamee.....	9; Male.	Mussulman.	Unknown.	Three days.	15th March 1846.	None.	Paroxysms of spasm severe; opisthotonos; partial closure of mouth.
7	Joao de Rozario ..	21; Male.	Portuguese Christian.	Unknown; Dhobee Tank.	Two days.	5th June 1846.	Bookbinder.	Pain and difficulty in opening the mouth, followed by paroxysms of spasms; pulse frequent and small; profuse perspiration.
8	Simon D'Souza....	31; Male.	Portuguese Christian.	Unknown; Mazagon.	Twelve hours.	22nd June 1846.	Domestic Servant.	Trismus; general spasms in paroxysms; pulse not much affected.
9	Dhajee Ramah	25; Male.	Hindoo.	Unknown; Tardeo.	Four days.	20th Sept. 1846.	Carpenter.	Spasms; chiefly of muscles of back; mouth but little closed; pulse frequent.

ases of Traumatic Tetanus.

Treatment.	Result.	Cause.	Length of time after Injury.	Remarks.
rphia, in repeated oses ; occasional urgatives of Castor il; and one dose ith Turpentine.	After the first dose of the Morphia the symptoms subsided : closure of mouth returned in seven days, and was followed by spasms of the muscles of back. These slowly subsided after the repetition of the Morphia, in doses of 10 minims, repeated at intervals. He was discharged well on 23rd November (twenty-five days after symptoms came on).	A simple fracture of thigh, from a fall from a height.		
ct. Cannabis, in 0 minim doses, ll under its in- uence.	*Death* on the morning of the day after admission.	Compound and comminuted fracture of second and third toes; soft parts much lacerated.	Twelve days.	
ct. Cannabis in 10 inim doses; pur- atives, with Castor id Croton Oils.	*Death* two days after admission.	A small wound over the left side of frontal bone, from a fall.	Six days.	
t. Cannabis.	*Death* two days after admission.	Contused wound of thumb; in a state of gangrene on admission.	Nine days.	
ct. Cannabis and lorphia; Turpen- ne enemata pur- atives.	*Death* three days after admission.	Doubtful. Had been beaten, and some cicatrices were present.		
t. Cannabis.	*Death* one day after admission.	Contused wound of scalp, just above right temporal ridge, caused by a fall; sloughy on admission.	Six days.	
t. Opii and Tinct. annabis; occasion- purgatives.	*Death* two days after admission.	Attributed to guinea-worms, which he had in both legs.		
t. Cannabis and nct. Opii.	*Death* thirty-six hours after admission.	Attributed to an ulcer from a guinea-worm in right leg.		
t. Cannabis.	*Death* sixteen hours after admission.	Contused wound of left leg, from a fall; granulating on admission.	Twenty-four days.	

Number.	Name.	Age & Sex.	Caste.	Native Country, and Residence in Bombay.	Duration of Disease before Admission.	Date of Admission.	Occupation	Prominent Symptoms.
10	Suckena.....	28; Female.	Mussulman.	Unknown; Kamatta Poora.	One day.	30th Oct. 1846.	Domestic Servant.	Trismus; opisthotonos; skin hot; pulse 120.
11	Henry Mouat	31; Male.	Indo Briton.	Unknown; Sonapore.	Four days.	15th Nov. 1845.	Watchmaker.	General spasms, and rigidity; pain o chest; a feeling of suffocation mouth partially closed; pulse frequent.
12	Pestonjee Dadabhoy	35; Male.	Parsee.	Unknown; Mazagon.	Attacked in Hospital.	Admitted with wound of leg 2nd Nov. 1846; seized with tetanic symptoms 19th Nov.	Sepoy.	Pain of throat; difficulty of swallowing; stiffness o jaws, followed by spasms, but no severe.
13	Nabajee Rutna	6; Male.	Hindoo.	Unknown; Small Colaba.	Attacked in Hospital.	21st Oct. 1846.	None.	Spasm of the muscles of throat, and of the nape of the neck; pulse rapid and weak.
14	Joaquim D'Souza ..	25; Male.	Portuguese.	Goa; Fort George Barracks.	Attacked in Hospital.	10th June 1847.	Cook.	Pain and difficulty in opening the mouth; frequent spasms.
15	Pandurang Sukkaram.....	5; Male.	Hindoo.	Unknown; Oomercarry.	Attacked in Hospital.	23rd April 1847.	None.	Stiffness of jaw rigidity of muscles of abdomen and neck; paroxysms of spasm
16	Pumia	13; Female.	Hindoo.	Unknown; Dhobee Tank.	Attacked in Hospital.	12th Oct. 1847.	None.	Febrile heat, followed by stiffness of masseter muscle; the surface of wound, before healthy, became pale and glazed afterwards opisthotonos.
17	Sheik Rajanath ...	50; Male.	Mussulman.	Unknown.	Attacked in Hospital.	11th Jan. 1847.	Cook.	Stiffness of jaws spasms in paroxysms.

Treatment.	Result.	Cause.	Length of time after Injury.	Remarks.
rgatives, with Calo-nel and Colocynth, Croton Oil, & Tinct. Cannabis.	*Death* two days after admission.	Eight days before admission she had a miscarriage of a three months' child; afterwards much flooding, followed by fever.		
ct. Cannabis, and Tinct. Opii; sinapism to the spine; purgatives.	*Death* four days after admission.	A slight wound (contused) of right leg, received by striking against a cot, eight days before admission.	Four days.	
ct. Cannabis; purgatives.	*Death* 11th December, three weeks after symptoms came on.	Contused wound of tibia (right), caused by the wheel of a buggy.	Sixteen days.	
ct. Morphia; purgatives, with Castor Oil and Turpentine.	*Recovery*, and discharged thirty-four days after admission.	A simple fracture of thigh.	Seven days.	Was admitted on 21st October; was doing well till morning of 29th, *then* had febrile heat; in the evening had tetanic symptoms distinct; relieved by remedies in greater part; stiffness of jaw continued. On night of 5th November spasms returned, and continued slightly for several days; gradually subsided.
ract of Belladonna doses carried to grains, repeated t intervals of two ours.	*Death* thirteen days after admission, and three days after symptoms.	Contused wound of leg, granulating.	Ten days.	The Belladonna produced drowsiness, but did not seem to give so much relief as the Hemp in other cases.
ches to right temle; Antimony and Tinct. Cannabis.	*Death* seven days after admission, and one day after symptoms.	Extensive lacerated wound over left temporal region, exposing pericranium.	Unknown.	
imony and Tinct. annabis; purgatives f Castor Oil, Turentine, and Croton il.	*Death* eighteen days after admission; two days after symptoms.	Severe contused and lacerated wound of thigh, granulating.	Sixteen days.	
ct. Cannabis.	*Death* twelve days after admission, and four days after symptoms.	Contused wound of foot, with comminution of phalanges; in a sloughy state.	Eight days.	

Number.	Name.	Age & Sex.	Caste.	Native Country, and Residence in Bombay.	Duration of Disease before Admission.	Date of Admission.	Occupation	Prominent Symptoms.
18	Myramjee	42; Male.	Hindoo.	Unknown; Mahatapacaree.	Attacked in Hospital.	22nd Jan. 1847.	Shopkeeper	Trismus complete; frequent and general spasms; rigidity of abdomen.
19	Meernabhoy	40; Male.	Hindoo.	Unknown; Bhendy Bazar.	Eight days.	4th Nov. 1847.	Beggar.	Spasms of muscles of abdomen and mouth; breathing hurried.
20	Hurreechund.....	25; Male.	Hindoo.	Unknown.	Two days.	12th Dec. 1847.	Unknown.	Rigidity of abdominal muscles; partial closure of mouth; pulse moderate; bowels confined.
21	Esteril, Mary.....	25; Female.	Portuguese.	Goa; Chundunwaddee.	Three days.	20th Dec. 1847.	Ayah.	Frequent spasms; pulse frequent.
22	Solomon Kallee	30; Male.	Mussulman.	Unknown; Mazagon.	Seven days.	11th July 1847.	Oil-maker.	Mouth nearly closed; spasms frequent, severe, and general; abdomen tense; skin cool; pulse not frequent on admission.
23	Taz Mahomed	32; Male.	Mussulman.	Unknown; Nagpara.	One day.	15th July 1847.	Coolie.	Spasms frequent, severe, and general; abdomen very tense; skin cool; pulse small and frequent.
24	Hurree Bappoo ..	13; Male.	Hindoo.	Unknown; Khetwaddee.	Four days.	23rd July 1847.	None.	Restless; frequent spasms; heat of skin; pulse frequent.
25	Sinbilland	27; Male.	Mussulman.	Unknown; Byculla.	Three days.	4th March 1847.	Horse-keeper.	Partial trismus; pulse but little affected at first; frequent spasms.
27	Dhoondee Benajee..	35; Male.	Hindoo.	Unknown; Mehmon Gully.	Threed ays.	10th Aug. 1847.	Peon.	Symptoms not detailed; said to have been well marked.

Treatment.	Result.	Cause.	Length of time after Injury.	Remarks.
t. Cannabis.	*Death* 22nd January 1847.	Spreading gangrene of foot and leg, from contusion, for which amputation of thigh.	Seven days after injury, night following operation.	Case of much interest. Injury severe, but without fracture: gangrene came on and spread. At first refused amputation, afterwards consented: limb removed by anterior and posterior flaps, above the knee, at 7 A. M. A great deal of hæmorrhage; one vessel only tied; much collapse. Partial reaction at 5 P. M. At 1 A. M. seized with tetanus: lived during that day, and died at 5 A. M. day following.
t. Cannabis.	*Death* the day after admission.	Had suffered from guinea-worm, but there was no wound at the time of admission.		
t. Cannabis; purtives, with Croton l.	*Died* three days after admission.	Attributed to a sloughing ulcer of instep.		
t. Cannabis; purtives with Croton l.	*Death* two days after admission.	A small, superficial, contused wound of right temple, caused by a blow from a stick.	Five days.	
donna in large ses.	*Death* two days after admission.	Contused and lacerated wound of index finger; bone exposed.	Six days.	The Belladonna seemed to give very little relief. Pupils were not affected.
e doses of Bellanna, in three ain doses, till pus were dilated, d he became owsy.	*Death* two days after admission.	Attributed to a small ulcer on dorsum of foot, from a guinea-worm.	One month.	No relief from Belladonna.
nel, Extract of mp, and Antiony.	*Death* three days after admission.	Attributed to his having had his ear bored, as a cure for swelled testicle.	Unknown.	
atives, with Croh Oil; Tinct. Canbis.	*Death* three days after admission.	Attributed to exposure to cold.	Unknown.	
t one hour after mission; no meine given.	*Death* one hour after admission.	Attributed to a guinea-worm in foot.	Unknown.	

Number.	Name.	Age & Sex.	Caste.	Native Country, and Residence in Bombay.	Duration of Disease before Admission	Date of Admission.	Occupation	Prominent Symptoms.
27	Framjee Cowasjee..	25; Male.	Parsee.	Unknown; Dhobee Tank.	Four days.	1st Oct. 1847.	Cook.	Trismus; rigidity of muscles of abdomen and of neck; pulse soft and feeble.
28	Damjee Moonkon..	30; Male.	Hindoo.	Unknown; Duncan Road.	Eight days.	4th Sept. 1847.	Coolie.	Spasms, constant; opisthotonos; trismus; pulse 88.
29	Mungoo	25; Female.	Hindoo.	Unknown; Dhobee Tank.	Four days.	9th June 1847.	None.	Frequent spasms; bowels slow.
30	Framjee Eduljee ..	30; Male.	Parsee.	Unknown; Fort.	One day.	9th May 1847.	None.	Spasms general and frequent; trismus nearly complete; pulse 96.
31	Antone D'Souza ..	20; Male.	Portuguese.	Goa; Kavel.	Four days.	5th May 1847.	Cook.	Trismus; general spasms; pulse 124.
32	Govinda.....	25; Male.	Hindoo.	Unknown; Nagpara.	Three days.	1st June 1847.	Coolie.	Spasms frequent and general, but not urgent.
33	Bajree.....	24; Male.	Hindoo.	Unknown; Colaba.	Four days.	1st Feb. 1848.	Peon.	Rigidity of abdominal muscles; frequent spasms; pulse 96, easily compressed.
34	Madoo Pada.....	25; Male.	Hindoo.	Rutnagherry; Mandavee.	Two days.	14th Jan. 1849.	Coachman.	Trismus; frequent spasms, in paroxysms; pulse 96; face anxious; emaciation; dysphagia.
35	Sheik Chundoo....	20; Male.	Mussulman.	Unknown; Nagpara.	Three days.	28th March 1848.	Butcher.	Complete trismus; frequent paroxysms of spasms; pulse 120; breathing affected.
36	Bicaree Singh	35; Male.	Hindoo.	Lucknow; Parell.	Three days.	23rd March 1848.	Barber.	Trismus complete; spasms frequent and general; pulse 100; bowels confined.
37	John Baptiste	24; Male.	Christian.	Unknown; Colaba.	Three days.	10th Feb. 1848.	Shoemaker	Trismus; general and severe spasms.
38	Antone Bastian....	37; Male.	Christian.	Goa; Colaba.	Three days.	5th Feb. 1848.	Butler.	Complete trismus; spasms of muscles of neck; pulse very rapid.

Treatment.	Result.	Cause.	Length of time after Injury.	Remarks.
ches between the apulæ; purgatives, ith Castor Oil; inct. Cannabis.	*Death* four days after admission.	Marks of a guinea-worm in right foot.	Unknown.	
gatives, with Croton il; Tinct. Canna-is.	*Death* two days after admission.	The little toe of right foot had been bruised off.	Seven days.	
gatives, with Croton il; Tinct. Canna-is.	*Death* the day after admission.	Came on after her confinement.	Eight days after her confinement symptoms came on; no other cause traced.	
ct. Cannabis; *Tobacco injection*, and epeated every hour, ll pulse reduced.	*Death* one day after admission.	Attributed to a wound of the sole of the foot, but which had cicatrized.		The *Tobacco injection* was used four times, without any effect upon the spasms.
ct. Opii; Tinct. annabis.	*Death* two days after admission.	Followed an attack of confluent small-pox.		
gatives, with Croton il; Turpentine ene-ata; Tinct. Can-abis.	*Death* ten days after admission.	Had suffered from guinea-worm, which had caused a small abscess in right leg.	Unknown.	
gatives of Croton il; inhalation of ulphuric Ether.	*Death* the day after admission.	A slight injury of one of the toes.	Unknown.	Ether was inhaled twice, the first time with much relief: second inhalation was followed by drowsiness, heat of skin, and frequency of pulse, which continued for several hours.
nine and Extract f Hemp; chicken up, sago, and wine.	*Death* a few hours after admission.	Had fever for four days, *then* symptoms came on; there was an eschar from marking-nut at back part of head.		He was not able to swallow any of the medicine.
ct. Cannabis.	*Death* a few hours after admission.	Had a guinea-worm in left foot, partially extracted; unattended with much irritation.		
gatives, with Croton il; purgative ene-ata; Tinct. Canna-s.	*Death* five days after admission.	Contused wound of inner side of left leg, from a blow by a stick; was foul and sloughy looking.	Four days.	
ct. Opii, and Tinct. annabis.	*Death* a few hours after admission.	A cut from a piece of glass on little toe.	Six days.	
t. Morphia, and inct. Cannabis.	*Death* one day after admission.	Had the cicatrices of some ulcers on the legs.		

Number.	Name.	Age & Sex.	Caste.	Native Country, and Residence in Bombay.	Duration of Disease before Admission.	Date of Admission.	Occupation	Prominent Symptoms.
39	Antone Fernandes..	30; Male.	Christian.	Goa; Sonapore.	Four days.	20th Dec. 1848.	Sailor.	Trismus almost complete; great dysphagia; no other muscles affected.
40	Fatmah	25; Female.	Mussulman.	Mangalore; Bhendy Bazar.	Attacked in Hospital.	9th Jan. 1849.	Coolie.	Trismus; constant spasms.
41	Seedee Syud.....	37; Male.	Mussulman.	Zanzibar; Bhendy Bazar.	Attacked in Hospital.	27th April 1849.	Sailor.	Spasmodic contractions of muscles of injured limb; trismus; hurried breathing.
42	Ragoo Bhyroo	30; Male.	Hindoo.	Kolapore; Dhobee Tank.	Four days.	4th June 1849.	Coolie.	Rigidity of abdomen; occasional spasms; partial trismus.
43	Chand Cheema....	35; Male.	Hindoo.	Hyderabad; Duncan Road.	Three days.	13th March 1849.	Coolie.	Trismus; rigidity of abdominal muscles; pulse small.
44	Mangoo Muttuh ..	45; Male.	Hindoo.	Bangalore; Esplanade.	Four days.	23rd April 1849.	Hamall.	Almost complete trismus; paroxysms of spasms but not frequent; abdomen not very rigid.
45	Cuddeem Baye....	26; Male.	Mussulman.	Hyderabad; Dungaree.	Four days.	26th April 1849.	Weaver.	Spasms general and frequent; almost complete trismus; pulse 96.
46	Sheik Jona.....	30; Male.	Mussulman.	Benares; Grass Bazar.	Fourteen days.	4th July 1849.	Weaver.	Spasms; rigidity of abdominal muscles.
47	Ragoo Mullaree ..	34; Male.	Hindoo.	Hurnee; Nagpara.	Four days.	15th Sept. 1849.	Biggarie.	Paroxysms of spasms; abdomen rigid.
48	Gunnus Mahtaree..	48; Male.	Hindoo.	Hindostan; Dungaree.	Three days.	6th Oct. 1849.	Carpenter.	Frequent spasms of muscles of back; abdomen rigid; almost complete trismus; pulse very feeble; dysphagia.

Treatment.	Result.	Cause.	Length of time after injury.	Remarks.
nine in six grain ses, uncombined.	*Death* thirty-six hours after admission.	Had received a small wound on the nose, eight days before admission.	Four days.	
lation of Chloro-rm alone.	*Death* forty-eight hours after symptoms.	Amputation was performed for grangrene of arm.		
gatives, with Calo-el & Jalap; Tinct. nnabis; Opiate tion to wound.	*Death* four days after first symptoms.	Compound and comminuted fracture of right leg.	Ten days.	This was a singular case. First symptom noticed was spasmodic contraction of muscles of leg on extension. On following day, he complained of having passed a bad night, and of pain of limb; his face was anxious, and, on inquiry, said he had stiffness of jaw.
gatives, with Cro-n Oil; Extract of emp; nutritious et.	*Death* two days after admission.	Attributed to a guinea-worm, extracted by a Hajam twenty days before; no trace of it on admission.		
t. Cannabis; nu-tious diet; inha-tion of Chloro-rm.	*Death* two days after admission.	A small opening was present, through which a guinea-worm had been extracted.		The Chloroform did not produce much effect.
t. Cannabis; pur-tives, with Croton l.	*Death* two days after admission.	Contused wound of index finger (left), last phalanx.	Four days.	
roform; purga-es, with Croton l.	*Result uncertain.*	Attributed to a guinea-worm.		The Chloroform gave relief each time.
p; nutritious diet.	*Death* fifteen days after admission, and thirty-nine after symptoms.	Ulcer over tibia, from a guinea-worm.		Remarkable for its gradual progress.
t. Cannabis; inha-tion of Chloro-rm; nutritious t.	*Death* four days after admission.	Had recently suffered from a guinea-worm in right foot.		The relief from the Chloroform was at first marked, though transient; afterwards it was less so.
l not swallow any dicine.	*Death* the day after admission.	There was a slough on the left thigh, which arose from a boil.		

Number.	Name.	Age & Sex.	Caste.	Native Country, and Residence in Bombay.	Duration of Disease before Admission.	Date of Admission.	Occupation	Prominent Symptoms.
49	Gunga.....	30; Female.	Hindoo.	Concan; Khetwadee.	Attacked in Hospital.	24th Jan. 1840.	Coolie.	1st, stiffness of neck and jaw; 2nd, dysphagia, and partial closure of jaw; muscles of face contracted; 3rd, paroxysms of spasms, and rigidity of abdominal muscles.
50	Mahadew Ittojee ..	30; Male.	Hindoo.	Concan; Chuna-ka-Buttee.	Attacked in Hospital.	8th Dec. 1850.	House Hamall.	General rigidity of muscles; trismus; hurried breathing; paroxysms of spasms.
51	Essoo Wittoo.....	25; Male.	Hindoo.	Vingorla; Chinspooglee.	One hour.	12th Jan. 1851.	Painter.	Trismus almost complete; tetanic expression of face; rigidity of muscles of neck and of abdomen; at first no spasms, afterwards slight. Eight days after admission lower limbs became paralytic, and urine retained; sensation in the lower extremities was also lost; bed sores over the sacrum.
52	Abdool Rhyman....	22; Male.	Mussulman.	Lucknow; Bhendy Bazar.	Four days.	11th Sept. 1850.	Weaver.	Severe paroxysms in neck, abdomen, and lower extremities; partial trismus; breathing hurried; pulse frequent, of moderate strength; tongue moist, coated.
53	Ramah	22; Male.	Hindoo.	Concan; Dhobee Tank.	Eight days.	17th Jan. 1851.	Cart-driver.	General rigidity; partial trismus; occasional short paroxysms; pulse small and frequent; breathing slightly hurried.
54	Chand Bux.....	3; Male.	Mussulman.	Bombay; Lighthouse, Colaba; exposed to cold.	Five days.	5th Dec. 1850.	None.	Frequent spasms; trismus almost complete; pulse feeble; constant moaning.
55	Andoo Gunnoo	22; Male.	Hindoo.	Concan; Chuckla.	Three days.	16th Dec. 1851.	Coolie.	Trismus complete; occasional spasms; general rigidity.

Treatment.	Result.	Cause.	Length of time after Injury.	Remarks.
riate of Morphia; utritious diet.	*Death* eleven days after admission, and four days after symptoms.	Contused and lacerated wound of foot; was doing well.	Seven days.	
rphia; the inhala- on of Chloroform.	*Death* seven days after admission; two days after symptoms.	Large contused wound of left leg; it was sloughy looking; tibia was exposed.	Five days.	The Chloroform at first gave relief.
nine and Opium; urgatives, with Cro- n Oil; Mercury, ith the view to ffect the mouth; ry cupping on the ins; nutritious diet.	*Death* twenty-eight days after admission.	Contused wound of leg, caused by a buggy wheel; it was granulating.	Eighteen days.	The fatal termination seemed more due to the debility from the bed sores and confinement than to the tetanic symptoms.
phia; ice to the bine, applied by leans of an ox's ullet.	*Death* two days after admission.	An ulcer from contused wound of leg, received sixteen days before symptoms.	Sixteen days.	The first application of ice was followed by relief. For some time afterwards relief less marked; the application not sufficiently constant to test its efficacy.
nine; Hemp; nu- itious diet.	*Death* the day after admission.	Contused wound of right great toe, caused by a horse treading on it.	Two days.	
t. Cannabis; Qui- ne; nutritious diet.	*Death* eleven days after admission.	A small superficial wound of forehead, caused by a fall.	Five days.	There was at first considerable improvement, but spasms afterwards became aggravated.
gatives, with Castor il and Turpentine; nct. Cannabis.	*Death* two days after admission.	There was the scar of a small ulcer on the shin, and superficial excoriations between the toes.		

Number.	Name.	Age & Sex.	Caste.	Native Country, and Residence in Bombay.	Duration of Disease before Admission.	Date of Admission.	Occupation	Prominent Symptoms.
56	Babajee.....	30; Male.	Hindoo.	Deccan; Duncan Road.	Two days.	2nd May 1851.	Weaver.	Muscles of neck and of abdomen rigid.
57	Dewjee Ghattee....	35; Male.	Hindoo.	Deccan; Chundun Waddee.	Two days.	29th April 1851.	Cart-driver.	Rigidity of muscles (general); spasms frequent; trismus complete.
58	Sheik Essoob.....	22; Male.	Mussulman.	Belgaum; Kalkadavee.	Five days.	10th Aug. 1851.	Buggy-driver.	Frequent paroxysms of spasms; opisthotonos; almost complete trismus; rigidity of abdominal muscles.
59	Jao Lopez	37; Male.	Christian.	Goa; Bhendy Bazar.	Four days.	30th July 1851.	Cook.	Almost complete trismus; respiration hurried; rigidity of muscles of neck, back, and arms; occasional paroxysms of spasms; pain at ensiform cartilage.
60	Yallabah Sanab....	30; Male.	Hindoo.	Guzerat; Bholeshwur.	Four days.	1st Sept. 1851.	Beggar.	Trismus; paroxysms of spasms; rigidity of muscles of neck and back.
61	Roop Chund.....	35; Male.	Hindoo.	Bombay; Bhendy Bazar.	Five days.	1st July 1851.	Shoemaker	Partial trismus; rigidity and general spasms; dysphagia; breathing slightly hurried; pulse 120.

Treatment.	Results.	Cause.	Length of time before Injury.	Remarks.
gatives, with Castor il and Turpentine; inct. Cannabis.	*Death* two days after admission.	A guinea-worm the preceding day extracted, but no irritation about the opening.		
t. Cannabis; purtives, with Castor l and Turpentine.	*Death* six days after admission.	Contused wound of leg, granulating on admission.	Ten days.	
gatives, with Croon Oil; Tinct. Canbis.	*Death* three days after admission.	Attributed to a small ulcer near left heel, caused by a guinea-worm.		
ritious diet; Tinct. nnabis.	*Death* two days after admission.	A contused wound, of small size, near right little toe.	Six days.	
ine and Hemp; iate lotion to sore; rgatives, with stor Oil and Turntine; nutritious t.	*Death* seven days after admission.	A circular ulcer on calf of left leg, the result of a bite from a rat; it was sloughy looking.	Twenty days.	He improved at first, but suddenly died in a paroxysm of spasms.
t. Cannabis.	*Recovery.*	Incised wound of forearm, a little above the wrist; sloughy looking.	Unknown.	There was some doubt whether this was a case of traumatic. The man himself said the symptoms came on before the wound was received.

CASES

SELECTED FROM THE

HOSPITAL PRACTICE OF THE 1st FUSILIERS, FOR 1851.

BY F. S. ARNOTT, M.D.,

Surgeon, 1st Bombay European Regiment (Fusiliers).

Presented 6th March 1852.

No. 1.—Case of Malingering.

Feigned Diseases are proverbially the most difficult and unsatisfactory cases a medical man is called upon to treat, and the reasons are obvious: the patience and determination of the malingerer; the seeming truthfulness, and not unfrequently the consistency of his story; the severity of his sufferings, and the obstinacy of his disease; his quiet and uncomplaining submission to the most severe and painful remedies; his apparent anxiety to accelerate his recovery, &c. &c., would stagger any inexperienced person, who has not narrowly watched his symptoms, their progress, and their effects on the constitution generally; and who has not noted down and compared his statements, as made at different times, with each other, as well as with the original cause and the course of the malady.

In each case of malingering, there are, moreover, various adventitious circumstances, more or less calculated to perplex the army medical man, and are well deserving of consideration. The haggard and care-worn expression worn by the apparent sufferer; his subdued tone of voice; the pile of pillows by which he is surrounded or propped up, &c. &c., very easily impose upon and excite the sympathy of comrades and occasional visitors; and, as many persons, who would never presume to venture an

opinion in reference to the most simple ailment, consider themselves not only privileged, but able to pronounce an opinion in cases of suspected malingering, it is very possible the medical officer will hear very decided expressions of compassion for the poor patient, with insinuated doubts as to the correctness of his diagnosis. It is even possible he may be pestered by mischievous, officious, and ignorant interference.

The medical man is prepared for, and not to be imposed upon by all these things: he will sooner or later have detected inconsistencies, unnoticed by others; trifling they may be, but still, when compared together, leading only to one inference. It will have occurred to him that the causes assigned, and the symptoms, are not always and in every way reconcileable,—that something is inexplicable when considered in reference to the usual course of similar cases,—that the patient's loud and earnest protestations of suffering are not supported by the appearances of the diseased or injured parts,—that his groans are more loud and piteous than people similarly affected generally emit,—that during an examination he does not always groan or scream loudest at the proper time,—that his contortions at such times indicate a degree of agony not easily accounted for, and which of themselves, indeed, would cause more pain than the examinations he is undergoing,—that instead of assuming a position that would give most ease if he were really suffering, he assumes one that would inevitably add to his distress,—that the constitutional disturbance is not always proportionate to the severity of his suffering, and the acuteness of his disease; but, on the contrary, that in spite of the agony he endures, his appetite keeps good,—that though he declares he can eat nothing, and can scarcely move from weakness, no great degree of, nor rapid emaciation can be observed; and that the most generally trusted to, and efficacious means of cure or alleviation, never do the slightest good. This is probably the first point that attracts the attention of the medical man: on it the malingerer always errs—he carries it too far.

Almost every case of malingering presents difficulties of its own, but the responsible position which the medical man occupies will of course prevent his acting rashly and precipitately; and he

will watch it carefully, and never, or at least not too soon, evince impatience or suspicions, until he has gradually and completely satisfied himself as to the exact nature of the case. As long as a single doubt remains on his mind, he will treat it as one of genuine and real disease; but when, after a fair, full, and impartial consideration of every circumstance and every symptom, he feels fully convinced as to its true nature, he should determine in his own mind the proper course to pursue, and never swerve from it, being, as he ought to be, perfectly indifferent to the opinions of busy, officious, and intermeddling people. But, though with patience and dexterity it is rare to fail in detecting such imposition, yet the army surgeon should not expect that even when his mind is made up on the matter that all his difficulties are to cease. There is still a difficulty of an extraordinary and unexpected nature which he must be prepared for: the army surgeon, in cases of malingering, does not always meet with the support from the military authorities which he ought to be able to calculate upon. However singular it may appear, an impression prevails, that *courts-martial are unwilling to convict on charges of malingering*, and *the confirming authorities are willing to wink at the findings of such courts*. One general officer, for reasons of his own, and which of course he understood, never ordered a court-martial to revise the sentence on a trial for malingering; and another general officer, for reasons which he did not understand, but merely because the other had done so, considered himself bound to do likewise. It is generally understood that a court-martial is guided by the evidence laid before it; but it is possible that, unable fully to comprehend medical evidence, or to discriminate between the value of professional and non-professional opinions, such courts are guided rather by the quantity than the quality of the testimony elicited; and as a soldier can at any time get a dozen of his ignorant comrades and others to give opinions, the chances of his escape are much in his favour. Be this as it may, so little confidence have some medical men in the support they can calculate on receiving, that after the most tedious management of the case they will, rather than be thus foiled, yield up their own judgment and conviction, so as to allow

the malingerer to escape, and even to become a burthen on the pension establishment.

A few years ago two men were charged before a court-martial with malingering: another medical officer and myself were evidences for the prosecution, and our testimony went to convict the prisoners. For the defence no medical man was called, but some non-commissioned officers and comrades of the men gave their opinions of the cases. The court acquitted both prisoners, and the confirming authority confirmed the proceedings, but in his remarks stated that the "court had decided exactly contrary to the evidence laid before it," and after such a gross dereliction of duty he had no confidence in such a court. He was thus prevented from ordering a revisal of the finding, and the only course left was to represent the circumstances to head quarters, which he did, and the men were summarily dismissed from the service: they were natives. Some months afterwards, I was president of a medical committee, assembled to examine and report upon the state of health of a man who had been long in the sick report. After a most patient and searching examination and inquiry, we unanimously pronounced the man a malingerer. Charges were consequently preferred against him, and his own medical officer and myself had to give evidence on the trial. The court found him guilty, but the confirming authority evinced the greatest reluctance to carry into effect the sentence. He procrastinated, ordered further inquiry, had an interview with the prisoner, having deceived himself into the belief he could talk him over, &c. &c.: but it was all to no purpose—the man persisted, and after two months' useless delay the sentence was carried into effect. The man was flogged and dismissed the service with ignominy, and within forty-eight hours after reaching Bombay he had a stand-up fight in the Fort ditch with a sailor for five-and-forty minutes, though for the previous fifteen months he had been a cripple

The above remarks the following case is, I think, calculated further to illustrate; besides which, it may perhaps be considered interesting from the perseverance and determination the man evinced in the prosecution of his scheme for eighteen months.

The distress he all along assumed at his injured dignity and innocence by such unwarrantable and unfounded suspicions was most edifying, and probably not the least amusing and instructive part of it was the composure and unconcern displayed when he at last gave in, and returned among his comrades, and to his duty.

At Peshawur, in August 1849, in a rather dark night, private J. L., hitherto a healthy, stout, and able-bodied man, about ten years in India, when going across a piece of broken, uneven ground, under a corporal, to relieve another sentry, slipped his foot, and fell, or appeared to do so. He did not complain much at the time, and was duly planted on his post, but soon afterwards applied to be relieved, on account of injuries he had received in the fall. He was taken to hospital, complaining of acute pain in the lumbar region, and on examination appeared to be suffering severely. The pain was not referred to the spine, but rather to the muscles on each side of the vertebræ, on pressing which he expressed great agony, as he also did when made to move or bend the loins, &c. &c. There was no tumefaction nor discoloration of, nor heat in the parts. There were no febrile symptoms nor constitutional disturbance; he complained of no pain nor numbness of the lower extremities; he passed his urine naturally; his bowels acted freely, and his appetite was good. Though nothing could be discovered to account for the agony he said he endured, and though his account of the accident was considered unsatisfactory, still, as no positive conclusion could be arrived at at once, and it was possible that the spinal cord or its sheath, or perhaps the parts supplied by the lumbar plexus of nerves, might have been injured by the concussion, he was admitted, and treated in the ordinary way for such an injury. He was copiously leeched, cupped, and well fomented; liniments, with frictions, blisters, and lotions, were afterwards tried; he took colchicum, dover's powder, quinine, narcotics, &c. &c.; but nothing seemed to have the slightest, or even the most temporary good effect. He experienced no relief from the treatment, but, on the contrary, he gradually and almost daily appeared to be getting worse. But still there was no corresponding constitu-

tional derangement: his bowels acted regularly; his urine was passed naturally; there was no numbness nor emaciation of the lower limbs, nor indeed anywhere, and his appetite continued good.

The pain, which at first appeared to be confined to the loins, or rather to the muscles on each side of the lumbar vertebræ, gradually extended to and occupied the entire vertebral column, including the muscles in the dorsal, lumbar, and sacral regions, and even stretched down to the hips and thighs. He then could scarcely be induced to leave his bed, and, when he did so, he walked in a stooping posture, and apparently in much pain; and in bed he said he could not rest without his head and shoulders being raised high by numerous pillows, &c.

Up to the time of our leaving Peshawur, in December, he remained much in the same state. On the line of march little could be done for him, and he was carried the whole way in a dooly or kajavah; but on arrival at Poona, in April 1850, more active measures were again had recourse to. The same treatment as above was repeated: cupping was freely resorted to, and a copious eruption all over the loins was brought out by tartar emetic ointment, and kept up, and for a time he seemed to improve. The eruption was allowed to heal, and he was placed as a convalescent in the lines, but there was no further improvement. After a time, appearing to become quite stationary, and being quite unable to perform his duty, he was again taken into hospital, where, as he appeared to be getting no better, and was unable to stand, or walk upright, or even to walk at all, without the support of two thick sticks, a medical committee to examine and report upon him was applied for.

The committee assembled on the 20th of June, and unanimously pronounced him a malingerer, on which charges were framed against him, and he was brought to trial before a line court-martial.

The proceedings of the medical committee were laid before the court, and I and Assistant Surgeon Bean were examined as evidences on the prosecution. Some non-commissioned officers, and some of the man's comrades, (but no medical man,)

were examined on the defence. The court acquitted him, and the confirming officer, though he admitted there was *evidence enough for a conviction, would not order the court to re-assemble.*

The man was accordingly released from arrest, but as he still maintained that he was unfit for the performance of his duties, he was ordered back to hospital, and the following is the admission report :—

J. L., Private, No. —— Company ; admitted 9th July 1850.

Symptoms and Prescriptions.—Complains of pain along the whole back, but particularly about the loins, and for which he has been in hospital for a considerable time lately : describes the pains as being most acute about the lumbar vertebræ, the crest of the ilium, and over the sacrum, and along the muscles on each side of the lumbar vertebræ. The pain, he says, also stretches through to his groin, and is everywhere much increased on pressure, or on attempting to walk or move. He makes water very frequently, and seldom can pass much at a time. On being questioned, states that he has no numbness of the lower extremities, except when it threatens rain, or on a change of weather ; cannot stand perfectly erect, nor pick up a stick from the ground.

No deformity, nor other preternatural appearance, can be detected in the spinal column. On examination there is no tumefaction in the lumbar region, nor wasting. Bowels are regular, appetite is good, and he sleeps well at night ; pulse is 106, and small, but he seems agitated ; tongue clean ; and, as far as can be ascertained, there is not any other appearance of bad health.

Not admitted.

When I refused to admit him into hospital, it was proposed again to arraign him before a court-martial, but the Judge Advocate General directed the charges to be quashed, as he had already been tried and acquitted, and he could not lawfully be tried again. It now became a question what was to be done with him : the Commanding Officer could not permit him to be walking about the lines doing nothing, and I refused him admission into hospital. The regimental authorities, as well as myself, were thus placed in a dilemma. My belief as to his real condition remained unshaken, and I could not yield ; and, there being no alternative, instructions were required from the higher authorities as to his disposal, when the Judge Advocate General said he must be brought up and disposed of as an unfit. When I ascertained this, I laid the whole circumstances of the case before the Medical Board, requesting instructions, and stating—"My intention, however, is not to bring him forward, and to declare him

a malingerer, if he is brought forward, unless the Medical Board decide that I should follow some other course." The Medical Board directed me to institute frequent examinations of the man, with the view of ascertaining if any changes had taken place in the state of his health, or were in the course of taking place, and to report again. The following are the results of these examinations :—

9th September.—Since last report has been going about the lines, doing nothing, as he says, from being unable to do anything, owing to the pains, &c. &c. he endures on motion, and from being unable to stand erect from the same cause. He walks with the body bent forward, and supported by a stick in each hand—his legs separated, and his feet apart; and generally moves along with a short step, slowly, and as if in pain, but at times he steps out tolerably well, and firmly.

On examination, he is found to be stout and muscular, and to all appearance in good health, and he says his appetite is good, and he makes his water freely; but at times his bowels are costive: his skin is cool, and his pulse natural, but his tongue is rather foul. On the cot, when desired to turn on his belly, he turns with great difficulty, slowly, and as if in great agony, and then rests on his knees, chest, and face, from apparent stiffness of the hip joints, which he cannot or will not bend. He does not, however, complain of any pain or numbness about the hips, thighs, or legs, but, on the spinal column being pressed, he groans audibly, and shrinks from the pressure. The pain is not confined to one spot, but reaches from between the shoulders to the sacrum, and now he complains less of the pain at each side of vertebræ than formerly.

12th September.—Is much in the same state: still complains of the pains in the vertebral column, increased on pressure and percussion, and has still the same stiffness about the hip joints. Is able to retain his urine and fœces, which he passes naturally, and says he has no numbness in any part of the lower extremities, which, excepting the hip joints, can be bent and moved about freely. General health still appears to be very good.

16th September.—Again examined before Drs. Bowie and

Cruickshank. Appears to be much the same, but complains more on pressure along the spinous processes of the vertebræ, and less on pressure of the adjoining muscles than formerly, and the pain extends to above the middle of the dorsal vertebræ as before. Hip joints still immoveable, and, when told to lie on his belly, rests on his knees, upper part of chest, and face, the belly not touching the bedding. There is no numbness nor pain about the hips, hip joints, or thighs, on pressure, but on attempting to extend or bend either lower extremity, he resists forcibly, throwing the muscles into strong (almost violent) action. He passes and retains his urine and fœces naturally. His health is still good, and I see no reason to change the opinion I have for some time held regarding his case.

19*th September*.—Present Drs. Ross, Russell, Bews, Bowie, and Cruickshank. Still complains as before, and is unable to stand erect, but leans forward, supported by a thick stick in each hand. On walking, he moves along slowly, and with a short step, and, on being desired to stand straight up against a wall, declares his inability to do so, and rests with his buttocks against it merely, and even when assisted with considerable force against his head and shoulders, his back could not be brought in contact with the wall. His sticks being taken from him, he could with difficulty reach the table, and could not unassisted get upon it. He was laid upon his back, and his lower extremities were extended with difficulty, and with great pain to him, every muscle in a state of rigidity. He was then desired to turn on his belly, which he did in the manner described in last reports, and lay there resting on his knees and fore part of chest and face. On examining the spinal column, the same acute pain was complained of as before. He was then replaced on his back, and put under the influence of chloroform, when every muscle became relaxed, and the limbs were extended and flexed with the greatest facility. He was then roused from his insensibility, and made to rise, and in his still half-stupid state stood quite erect, and was taken in a state of nudity to his cot in one of the wards, walking without his sticks, steadily and erect.

On the 1st of October he was brought before the annual

invaliding committee, when he was passed by a majority as an unfit, but the opinion I gave on the face of the proceeding was that I considered him a determined malingerer. When the proceedings of the invaliding committee reached head quarters, his excellency the Commander-in-Chief, in consequence of my opinion, called for a special report on the case, which I need not give here, however, as it was necessarily a mere repetition of matter already given. The man accompanied the other unfits to Bombay, but did not pass the Medical Board, and was remanded to his regiment. He accordingly returned to Poona on the 8th of February, and the following letter will furnish the further history of the case, as well as any other account I could give of it:—

"To the Superintending Surgeon P. D. A.,
"Poona.

"Sir,

"I do myself the honor to report, for the information of the Medical Board, the following circumstances connected with the case of Private L., of this regiment:—

"Private L. returned here from Bombay on the 8th instant, having been conveyed the whole way from Panwell in a cart, from inabilility to walk. When he came to the hospital he appeared to be in much the same state as when he left this, leaning on two thick bamboos, with the body bent over them; and, when desired to walk, doing so slowly, and as if in great pain; and when the sticks were taken from him he could scarcely put one foot before the other. He said that he had improved very little; that the change to Bombay had done him very little good, and that the people in Bombay had not attempted to do much for him. When placed on a bed, and desired to turn on his belly, he did so very slowly, groaning loudly the whole time; and he could not lie flat, but merely rested on his knees, shoulders, and elbows, the belly and chest not even touching the bed clothes. On running my fingers along the spinous processes of the vertebræ, he groaned louder than ever, and when I tapped them gently with my knuckles, he rolled about the bed in great agony. In the same way, when I attempted to flex or extend

the thigh, the stiffness was so great, and he suffered so much, that I succeeded imperfectly in doing so.

"I could, however, discover no preternatural appearances. The spinal column was straight, and on pressure or percussion of the lumbar and dorsal muscles he now complained of no pain. He said his appetite was still good, and that of his health generally he could not complain. He was still stout, and all the functions of the system were performed naturally.

"He was a prisoner from having been drunk the night before he left Bombay, and I did not admit him. He came to hospital again on the 12th, when I told him my opinion was unaltered, but that I should take him into hospital for eight days. In this determination, I was partly influenced by the wish to satisfy myself fully about his case previous to taking any ulterior steps.

"I accordingly admitted him on the 12th, and gave him some camphor liniment to rub his back with. On the 13th I was gratified to find a wonderful improvement; on the 14th he gave his sticks to the cooks, and on the 16th he was discharged from hospital at his own request, and yesterday he was put on duty, and mounted guard, apparently in as good health as he ever had in his life.

"I have the honor, &c. &c.
"(Signed) F. S. ARNOTT, Surgeon,
"1st Bombay European Regiment (Fusiliers)."
"*Camp Poona, 20th February* 1851."

"*Poona, 12th February* 1852.—He has never been in hospital since, and is one of the best set-up and best looking men in the regiment.—F. S. ARNOTT."

No. 2.—CASE OF HEPATIC ABSCESS, PUNCTURED.

In the following case the nature of the disease was on admission slightly masked by the concomitant constitutional disturbance. When the pyrexia subsided, and symptoms of hepatic disease developed themselves, they were not of that severe or urgent nature to lead to a very active, but rather to a palliative course of treatment. This was afterwards regretted, for had more decided

depletive measures been adopted during the first stage, it is possible that suppuration might have been altogether prevented.

From the 8th to the 26th July, that is from the 12th to the 30th day after the operation, the patient was in a most precarious state, from threatened peritonitis on the one hand, and debility on the other; and yet, to prevent the former, it became absolutely unavoidable to increase the latter. Of the course to pursue, however, there was no doubt, and the local abstraction of blood was compensated for by sustaining the system generally by generous diet, &c. &c., so that he bore the application of leeches, with repeated catharsis by castor oil, very tolerably, and when, at last, these untoward symptoms about the 1st August disappeared, his convalescence was rapid and steady.

Private J. W., No. —— Company, aged 21 *; admitted* 29*th April* 1851.

April 30*th.—Symptoms and Prescriptions.*—A healthy young Scotchman, with light hair and florid complexion, about sixteen months in the country. Has been two or three times in hospital, but only for a few days at a time, and with no serious disease.

Was re-admitted last evening, complaining of having been unwell for two days, with symptoms of fever, attended with headache, nausea, and an obscure pain about the epigastrium. Pulse quick and strong; tongue furred; skin hot and dry; bowels said to be open.

Took an emetic on admission, which acted well, and at bed-time had calomel gr x, and leeches were applied to his forehead, with relief. This morning he still complains of pain under the ribs, not confined to one spot, but extending to both sides, and the loins; nor does pressure increase it much. Skin rather hot and dry; pulse and tongue as yesterday; less nausea; complains much of thirst.

Sinapismus epigastrio. Haust. purgans statim. Mist. salin. diaphoretic ter in die.—Diet, spoon.

Vespere.—Bowels have been moved, but not freely. Complains less of his head, but thinks the pain about the epigastrium has increased.

Hirud. xxiv, epigastrio. Pilul. hydrarg. gr x, h. s. Ol. ricini cras mane.

May 1*st.*—Was feverish in the night, but is now cool. Still complains of nausea. Pain under the ribs is better, but he still complains of uneasiness on pressure.

Haust. effervesc. Repeat hirud. xxiv, et fotus epigastrio.

2*nd.*—Bowels were freely opened by the castor oil, and he feels much better, but the pain is not altogether removed. No pyrexia.

Repeat hirud. xxxvi, p. d.

3*rd.*—Improving, and complains only of weakness.—Cont. mistura.

4*th.*—To-day complains of an acute pain in the left side and epigastrium, much increased on pressure, a full inspiration, or turning over in bed; and he is obliged to lie on his back. Tongue red and dry; pulse full; bowels free; skin cool.

Hirud. lx stat. p. d. Pilul. cal. et ant. i, 3tiis horis, cum mist. salin. diaphoretic ℥j.

5*th.*—The pain is removed from the left side, but is still felt about the epigastrium, and is increased on pressure. Tongue foul; bowels not free.

Repeat med. purg. statim. Repeat hirud. et fotus p. d. Cont. pilul. et solut.

6*th.*—Still complains of the pain, which is severe on pressure. Bowels free; tongue still foul; no pyrexia; mouth not affected.

Repeat hirud. et fotus.—Cont. pilul. et solut.

7*th.*—Now refers the pain chiefly to right hypochondrium, but says it is less. Tongue still dry and foul; mouth not tender.

Ung. tart. antimon. part. dolent. Cont. pilul. et solut.

8*th.*—As yesterday.—Cont. omnia ut heri.

9*th.*—Pain is less felt, and is now entirely confined to the right side. Mouth slightly affected; bowels once open in the night. A copious eruption.

Med. purg. stat. Cataplasm. hypochondrio. Cont. solut. et pilul.

10*th.*—The same.—Cont.—Diet, chicken broth.

11*th.*—Complains much of the pain from the eruption, but says he still feels the deep-seated pain when he moves.—Cont. med.

Vespere.—Pain is again felt, more towards the epigastrium, when he draws a deep breath; feels sick at the stomach, and very weak. Pulse quick; bowels costive; gums tender.

Med. purg. stat. Empt. lyttæ p. d. Cont. mist. salin.

12*th.*—Pain of epigastrium better, and he feels easy. This morning bowels open; less nausea; tongue moist; pulse 84; gums still tender.—Cont. mist. salin.

13*th.*—Feels much the same; sleeps badly. Mouth sore; tongue foul; pulse moderate, but weak; pain on inspiration under cartilages of three lower right ribs; blister open.

℞. Mag. sulphas 3j. Inf. creat. ℥iss. m. ft. bis die. Omit pilul. et solut.

Vespere.—Has passed a bad day. More pain of right side; has had headache all day. Pupils dilated; bowels well open; pulse weak.

Empt. vesicat. ad part. doloris.

℞. ant. pot. tart. gr i. Aqua fontan. ℥vi ft. Capt. ℥j 3tiis q. q. horis. Pilul. cal. et ant. ii. h. s. s.

14*th.*—Slept badly, but looks better, and the pain in the right side is somewhat better. Pulse weak; tongue foul; bowels open freely.—Cont. pilul. et mist. salin.

Vespere.—Better. Bowels open three times; pulse quiet. Complains of soreness of mouth, and has headache after eating.

15*th.*—Slept badly. Pain still continues in one spot over the liver; the ribs are slightly projected, but there is no fluctuation. Pulse quiet; skin cool; tongue not so clean.

Ol. ricini 3iv stat. Cont. alia.

16*th.*—Better, but passed a restless night. Pulse quiet; skin cool; bowels open. —Cont.—Diet, spoon.

17*th.*—Slept well. Pulse quiet; tongue moist; bowels open; pain on inspiration less.—Cont.—Diet, sago or arrowroot.

Vespere.—Improving.

18*th.*—Improving.—Haust. cathartic stat.

19*th.*—Much better; complains of hunger.—Diet, half chicken; beer, ½ bottle.

20*th.*—Improving.

21*st.*—Improving, but complains of weakness.

22*nd.*—Had slight fever; bowels free.

Mist. quinæ. ℥i, ter in die.

23*rd.*—Again complains of pain, on pressure over the epigastric region.

App. hirud. xxiv, et fotus.

24*th.*—Pain was relieved by the leeches, and he is again better.

Inf. creat. ter in die. Pilul. cathartic ii, h. s. s. Med. purg. cras mane.

25*th.*—Improving.

26*th.*—Improving, but does not regain his strength.—Cont.

27*th.*—Complains of slight pain over the epigastric region on pressure; bowels costive.

Haust. purgans stat.—Diet, extra milk; omit beer.

Vespere.—The pain at the pit of the stomach got worse during the day, and three dozen leeches were applied, followed by fomentation, which relieved him temporarily, but he still complains of it.

Cont. fotus. Pilul. purg. ii, h. s. s.

28*th.*—Still complains of a dull pain over the epigastrium, extending towards right hypochondriac region. Bowels open in the night.

Cont. fotus sæpe. Repeat pilul. cal. et ant. i, ter in die. Repeat mist. salin. diaphoretic.—Diet, spoon; omit extras.

29*th.*—He still complains of the pain of right hypochondrium, and towards the epigastrium. Bowels confined. Is thin, emaciated, and weak; countenance betrays much anxiety, but he endeavours to keep up his spirits, and apparently succeeds pretty well.

Haust. purg. stat. Repeat hirud. p. d.

30*th.*—To-day complains chiefly of the pain about the epigastrium; lies on his back, and cannot turn on either side; bowels not freely open.

Repeat hirud. et fotus stat. R. mag. sulphas ℥iv, ant. pot. tart. gr. ½, aqua fontan. ℥xii, ft. mist. Sumat tertia part. ter in die, cum pilul. cal. et ant. i.

31*st.*—The same; only one stool.

Cont. med. et pilul. Repeat ung. tart. ant. lateri dextro.

June 1*st.*—To-day thinks himself easier.—Cont.

2*nd.*—The same.

3*rd.*—The same.

4*th.*—Has more acute pain, with hardness and tumefaction under the ribs. Bowels open.

Hirud. xxxvi, p. d. Cont. med. ut supra.

5*th.*—The leeches were repeated last night, as he thinks with relief.

Repeat hirud. p. d. Cont. alia.

6*th.*—Again had leeches last night, but hardness and tumefaction, with pain on pressure, remain.—Cont. medicamenta.

Vespere.—Repeat hirud. Med. purg. stat.

7*th.*—Pain is relieved, but he still feels an uneasiness.—Empt. lyttæ.

8*th.*—Blister rose well, and he feels easy to-day.—Cont.

9*th.*—The same. Continues to improve; complains of weakness. Cont.—Diet, spoon; beer, ½ bottle.

14*th.*—Since last report, appeared to be doing well; but last night had a rigor, and pain again returned. Leeches were applied, but with little relief. Bowels are freely open; mouth not affected.

Fotus. Cont. mist.

15*th.*—Again had a rigor, and still has acute pain about the præcordia, and on both the right and left sides. Bowels are open.

Ung. hydrarg. camph. Cont. mist.

16*th.*—Much tenderness on the left side, near the epigastrium. It is also much complained of on pressure of right side, as well as near the centre of the epigastrium. Had several rigors, but less violent in degree.—Cont.

17*th.*—Pain is nearly the same; the tumefaction has increased, and in its centre it is evidently becoming softer, but towards the sides the hardness remains. Bowels are free; weakness.—Cont.—Diet, custard pudding; beer.

18*th.*—A little to the right of the centre of the epigastrium fluctuation can be indistinctly observed; towards the edges of the tumour there is much tenderness and hardness; the rigors distress him, as he feels very weak after them.—Cont.

19*th.*—Fluctuation more distinct; centre of tumour more prominent. Has almost no appetite.

℞. Inf. gentian, ʒiss. Soda carb. gr. x, ft. ter in die.—Diet, beef tea.

20*th.*—The same; now feels much less pain, and has had no return of shivering.

21*st.*—The same.

22*nd.*—The same; no appetite.—Sherry wine, 2 oz.

23*rd.*—Is much the same; has no appetite.—Cont.—Diet, spoon; custard pudding; beef tea.

24*th.*—The tumour is larger, and more pointed; general health as before.

Apply a large warm poultice over the præcordia twice a day. Cont. inf. gentian.

25*th.*—No change.

26*th.*—No change; general health the same.

27*th.*—No change; seems nearly ready for puncturing.

28*th.*—The softness and fluctuation having gradually increased, and distinct pointing having taken place, a trocar and canula were this morning introduced into the most prominent part of the swelling under the ribs of the right side, near the centre of the epigastrium. A few ounces (ten) of thick well-conditioned pus

were withdrawn, without the aid of pressure, which was avoided, as well from the tenderness of the parts, as a wish to prevent injuring the diseased tissues by rough or unnecessary manipulation. A thin strip of lint was introduced into the wound, with the end hanging out, and the canula was then removed. He stood the operation well, and did not complain much of the pain; but he had slight shivering, and an inclination to syncope afterwards, which were relieved by a little hot wine and water, and by fomentation.—Diet, spoon; custard pudding; beef tea ½; sherry wine, 2 oz.

29*th.*—Has passed a good night, and slept well, and says he feels easier than he has done for some days, and is in good spirits. There was no discharge from the wound, but, on the end of the lint being slightly pulled, about an ounce and a half oozed out. Pulse moderate; bowels open, without medicine. Has taken a little nourishment.—Cont.

30*th.*—Last night a quantity of pus was discharged on the dressing, and this morning, on entirely removing the lint, about six ounces came away. He is in good spirits, and in appearance has improved, but he is very weak, and scarcely able to move without assistance. His bowels are open.

Vespere.—Ol. ricini cras mane.

July 1*st.*—The discharge during the night was very copious, and at the visit this morning about six ounces of healthy matter came away. He was not so well yesterday, complaining of slight headache, and want of appetite, but his bowels were well moved by the oil, and to-day he feels better again, and is in good spirits. —Diet, spoon; custard pudding; beef tea; beer, ½ bottle; sherry, 2 oz.

2*nd.*—A good deal of discharge yesterday, but not much at night; and at the dressing this morning less was removed, and of a thinner consistence: quantity removed about four ounces. Bowels are free; slept well; the surrounding hardness and tenderness are gradually subsiding.

Pilul. cal. et ant. i, omn. nocte.

3*rd.*—Less discharge yesterday, and none at night; but when dressed this morning about three ounces of pus came away. Bowels are open; appetite continues tolerable. Can now bear pressure over the epigastrium and right side considerably better than before.—Cont.

4*th.*—Considerable discharge during the night, but almost none this morning. Appetite as before.—Cont.

5*th.*—About four ounces of pus came away at the dressing last evening, and about six ounces this morning. There was no discharge in the night. Bowels are free.—Cont. pilul. i, mane et vespere.

6*th.*—A good deal of discharge during the day yesterday, and about three ounces at the dressing this morning. Is much emaciated, and very weak, but he thinks his appetite is rather improving, and he is in good spirits. He sleeps well, and bowels are open once or twice daily, aided by small doses of castor oil, as required. —Diet, spoon; custard; beef tea; beer, ½ bottle.

7*th.*—About three or four ounces of matter discharged yesterday, but none in the night, and only about one ounce this morning.

Cont. pilul. Decoct. sarzæ. comp. 1 lb. in die.

8*th.*—By no means so well. Complains of pains all over the abdomen, increased on pressure; loss of appetite, and a restless night. Pulse accelerated, and wiry; tongue red and dry; bowels not open.

Med. purg. stat. Fotus abdomini.

Vespere.—Bowels are open, but pain is not removed. Abd. hirud. xxxvi, fotus.

9*th.*—The pain was relieved by the leeches, but returned again, and is now diffused over the whole abdomen, which is very tender on pressure. Bowels are free; tongue very dry. Almost no discharge from the wound for two days.

Repeat hirud. et fotus statim. Cont. alia.—Omit wine.

Vespere.—Enema emollient.

10*th.*—The discharge from the wound is gradually decreasing: yesterday there was very little, and to-day only about a couple of ounces came away at the dressing; tenderness of abdomen less acute, but is still felt on pressure. Is very weak, and is troubled with constant hiccup. Three stools after the enema.

Cont. fotus. Cont. pilul. i, mane et vespere. Cont. decoct. sarsaparillæ.

Vespere.—Enema, emollient, stat. Repeat hirud. xxxvi, et fotus.

℞. Tinct. hyoscyami. gtta xl, h. s. s.

11*th.*—The tenderness of the abdomen increased much yesterday, and he became feverish and delirious. After the leeches it was relieved where they were applied, but was still felt severely in the left iliac region. Bowels free, but he had great irritability of stomach in the night, and had no sleep. Pulse yesterday was full and strong, but to-day is weak and tremulous; tongue very dry. Discharge of pus two ounces, healthy looking.

Repeat hirud. et fotus p. d.

12*th.*—The pain is considerably less, and he bears pressure better, but it is not altogether removed. Discharge from wound very trifling. Very weak, with constant and troublesome hiccup.

Hirud. vi, p. d. et fotus.

13*th.*—No discharge from the wound. Pain in left iliac region still complained of, and much felt on pressure.

Enema emollient stat. Hirud. xviii, et fotus.

14*th.*—Had a good deal of pain in the night, but confined to no particular spot, and shifting about hourly. It was relieved by fomentation, and afterwards he spent a tolerable night, though without sleep. Bowels are open; gums tender; tongue dry; pulse 110, small. Slight discharge from wound again this morning, of healthy pus.—Cont.

15*th.*—Seems nearly as yesterday. Still has the pain and tenderness of abdomen, increased on pressure, but it is not constant, nor fixed in any particular spot. Bowels open yesterday, but not freely; in the night slight discharge from the wound.—Cont. fotus. Repeat enema emollient.

16*th.*—Is much easier to-day. Yesterday the discharge increased to about six ounces, and this morning one ounce was discharged. Pus cream-like, and healthy looking. He has less pain, and more inclination to eat. Bowels are free; tongue more moist; pulse 100.

Repeat fotus et enema p. r. n. Omit alia.—Diet, half chicken; calf's-foot jelly.

17*th.*—An indifferent night, and again troubled with the pain of abdomen; wound discharged about an ounce. Bowels open; appetite not so good; again troubled with singultus.

Cont. ut heri. Sherry, 4 oz.

18*th.*—Has had a better night, and now feels easier. Less pain of abdomen; wound discharged about two ounces; extreme weakness.—Cont. alia.

19*th.*—Seems to be improving, and now bears pressure on any part of the abdomen. From the wound only half an ounce of matter was discharged. Appetite still improving. Bowels kept freely. Enemat. given as required.—Cont.

20*th.*—A restless night, with frequent calls to the necessary; stools very scanty, and passed with tenesmus. Discharge from the wound about one ounce.

R. Ol. ricini ʒvi, stat. Cont. alia.

21*st.*—Purging has left him, and he has no straining; the wound discharged about half an ounce yesterday, but to-day seems to have closed up; no pain of abdomen, and is again in good spirits.—Cont. alia.

22*nd.*—Had frequent calls to stool yesterday, but after an emollient enema the purging ceased. No discharge.—Cont.

23*rd.*—Has had a good night, and is in good spirits.—Cont.

24*th.*—Much better, but still very weak, and tormented by hiccup.—Cont.

25*th.*—Had a restless night; complains of slight pain of abdomen; bowels loose. There was a discharge of pus from the wound, amounting to three ounces.—Cont. —Diet, half chicken; calf's-foot jelly; beef tea; custard pudding; beer, ½ bottle; sherry, 4 ounces.

26*th.*—Has had a good night. Between three and four ounces of pus discharged yesterday. Can sit up a little.—Cont.

27*th.*—The same; discharge is less again; bowels free.—Cont.

August 1*st.*—Daily improving: there is a slight discharge from the wound every day. He sleeps well; bowels act regularly; his appetite is returning, and he slowly gains strength.—Cont.—Diet, extra; an egg.

5*th.*—Since last report has improved daily, but to-day has wandering pains in different parts of his abdomen; under the ribs, however, bears pressure well. The discharge from the wound has ceased.

Med. purg. Repeat hirud. et fotus si opus sit.

6*th.*—Did not require the leeches, and is again doing well.

10*th.*—Had a return of pain of abdomen in the night, but it was relieved by an enema and fomentation, and to-day is easy.

11*th.*—A good night.

From this time the case presented no unusual symptoms, and gave no further trouble. I had difficulty only in restraining his appetite. The debility, however, having been so extreme, it was not till the 1st of October that he could leave the hospital. He is now doing his duty.

No. 3.—Case of Tumour on the Brain.

The following was an extraordinary case. The enormous tumour, about an inch square, was certainly of no recent growth, yet no evidences of its existence were manifested previous to the man's admission into hospital on the evening of the 26th of September. It is, indeed, true, that I had observed a great change in his appearance and manners within the last few years. He had become stout and plethoric, less active in his habits, slow of utterance, and, as I thought, of less clear intellect. But these symptoms might have proceeded from many other causes; and, on the other hand, I never heard any complaints against him for neglect of duty, stupidity on matters of duty, want of memory, &c.; so that if the intellect had become enfeebled at all, it could have been to no great degree; nor was there sleepiness, loss of muscular power, &c., nor, though at one time much in hospital, had he been often sick of late, nor had he ever complained of his head. To say how or when the tumour originated is impossible; but I have been told, that on board the vessel which brought him out as a recruit, nine years before, he received a violent blow on the head, which laid him up for a long time. It is possible that it had its origin then; that its development was slow, gradual, and without any irritating influence on the surrounding parts for a great length of time, till, at last, suddenly, and without any appreciable cause, beyond the enormous size of the morbid deposit, the sac became disorganized, and gave way, causing the effusion about the base of the brain, &c., and giving rise to the symptoms, as detailed in the case.

The tumour is forwarded for the inspection of the Society, previous to being placed in the Museum of the Grant Medical College.

Private D. K., No. —— Company, age 28 *; admitted 27th September* 1851.

Symptoms and Prescriptions.—Re-admitted last night with acute headache, which attacked him suddenly a short time before, and for which he can assign no cause. The pain was not confined to any particular part of the head, and was very much increased when he moved or sat up. There was a dull and anxious appearance about the eyes, which were slightly suffused, and he seemed inclined to sleep, but he was perfectly sensible. He also complained of pain across the

abdomen, with nausea and vomiting, and after he vomited a quantity of food, the pain was relieved. He was cool, complained of no thirst, and said his bowels had been open in the morning. He was ordered leeches to the forehead and temples ; an emetic, and a purging enema ; with a cathartic dose, to be taken early this morning.

28*th*.—To-day he states that after the leeches the pain was relieved, but returned again very soon, and he has had a sleepless night owing to it. He still complains much of it, holding the temples between his hands, and sometimes exclaiming, as if in agony from it. He is still quite cool. Pulse 80, firm. The emetic had effect, and he was purged three times after the enema. Took the cathartic dose early this morning.

Ft. v. s. add lbj, and cup freely behind the ears.

Vespere.—During the day complained constantly of his head, and seemed to derive little benefit from the bleeding or cupping. The purging medicine had no effect, and suddenly, about 4 P. M., he became quite insensible, in which state he still lies, with slow and stertorous breathing. The pulse 54, firm, but intermitting ; pupils dilated, and not affected by the light of a candle ; skin moist. Another purging enema was at once given, which produced a copious evacuation, and five dozen leeches were applied to the head, but he seems little better.

Repeat v. s. stat. ad lbj. Empt. lyttæ nuchæ. Sinapism. internis femoribus et cruribus.

9½ P. M.—After the bleeding, became partly sensible, and, though still in pain, said he felt a little better, and could move his hand towards his head, &c. Up to about a quarter of an hour ago there seemed to be decided improvement, but he was then seized with a fit of coughing, after which he immediately expired.

Post-mortem examination fifteen hours after death.—On the head being opened, the dura mater was found to have a natural appearance and texture. The veins of the dura mater and surface of the brain were considerably distended with dark-coloured blood. On the brain being partly removed from its cavity, a quantity of serum, to the amount of three or four ounces, was observed to be effused at the base, and around the commencement of the spinal cord. The base of the brain had an extremely irregular appearance, a visible swelling existing in the right side, and pressing the pons varolii out of its place. A small sac was observed close to the origin of the seventh pair of nerves on the right side, with an opening in it, from which greenish-coloured serum was issuing. This sac had evidently burst before death, and given rise to the escape of the fluid mentioned above. On the opening being enlarged, it was found to communicate with the right lateral ventricle, which was immensely distended with serous fluid, and consequently of a much greater size than the other. A hard, irregularly-shaped substance was felt on the inner side of the ventricle, filling up a large space, and extending far into the substance of the brain. This was removed, and found to be an irregular fungoid-looking tumour, nearly of the size and shape of a small potato. It entered greatly into the formation of the ventricle ; and the sac before mentioned was evidently a part of it which had become disorganized, and at length given way. The brain in the neighbourhood of the tumour was much softened. The substance

itself had a hard, elastic feeling, and, on being cut into, was found to consist of a soft pulpy substance, of a reddish colour, and interspersed with masses of hard tuberculous matter. The other parts of the brain were healthy, as far as could be seen. Pleuritic adhesions in both lungs. Substance of lungs healthy. Heart of usual appearance. Liver somewhat larger, and of a softer texture than usual. Gall-bladder distended, and firmly attached to a portion of the duodenum.

TABLES AND REMARKS

ON THE

MEDICAL STATISTICS OF THE EUROPEAN TROOPS (QUEEN'S AND COMPANY'S) STATIONED AT BOMBAY, IN THE DECCAN, BELGAUM, DEESA, AND ADEN, BETWEEN THE YEARS 1830 AND 1846.

BY Mr. H. WEBB.

[From Records in the Medical Board Office.*]

Presented by the Medical Board.

Medical Statistics a valuable subject of inquiry.

Medical Statistics have always appeared to me a peculiarly valuable subject of inquiry, and few employments could have been selected for me that had more of a pleasure, and less of a task in it, than the one which lately fell to my lot while a supernumerary at the Presidency. As the

* In the latter part of the year 1851, Mr. Webb was employed in the office of the Medical Board, in assisting in the preparation of Statistical Returns for the Hon'ble Court of Directors. On the completion of this duty, Mr. Webb found himself in possession of a large collection of rough memoranda, and, being unwilling that the labour already bestowed on the preparation of these notes should be thrown away, he, with much praiseworthy assiduity and zeal, entered upon the task of working out the statistical information which they contained.

In the letter to the Medical Board which accompanies these Tables and Remarks, Mr. Webb observes:—"Conscious of my very superficial acquirements, and inability for such a task, I anticipate that the 'Remarks' will not be deemed of much value, but with the 'Tables' I hope it may be otherwise. For their construction very little talent suffices—a rudimentary knowledge of arithmetic, carefulness, and a little labour being, perhaps, all that was wanted; and these I have brought to bear upon the subject during the last seven or eight months, with an assiduity and perseverance which nothing less than an inclination for such pursuits, and an earnest desire to finish within an allotted time work once commenced, could have maintained. The 'Ratios,' as being perhaps the only valuable columns of the tables,

means of correcting errors, or at least of substituting accurate and distinct knowledge for vague and general impressions, on the remote causes of disease, the influence of the seasons upon health, the proportion of deaths, the relative prevalence and fatality of particular maladies, &c., it can hardly receive more attention than it deserves. Paucity of information, ignorance of facts which one or two well-arranged tables would have afforded, has frequently been the cause of much avoidable disease and death ; and, it may be added, (although, in a humane point of view, of secondary consideration,) of serious pecuniary loss to the State. I allude in particular to the system which obtained till very lately, of landing regiments and recruits from England at what is now well-known to be the most unhealthy season of the year. The majority of the new comers were, immediately after their arrival, sent off to Poona, Kirkee, or Ahmednuggur, arriving in June or July ; and, by a reference to the table for the Poona division, (large table, marked B,) it will at once be seen that this is the very period when fevers, bowel affections, cholera,—in fact, all the principal diseases, are at their maximum prevalence and fatality. We may, perhaps, even drop the word "principal," and say *all* diseases ; for, under the head of "Other Diseases," May, June, and July are seen to be the months of maximum admissions, and in the "Total" columns, the largest numbers of admissions and deaths are found within the same period.

Diseases in the Deccan are most prevalent and fatal during June and July.

Everywhere the hottest months of the year are the most unhealthy ; and, in the total columns of the different stations, we can (although it is somewhat masked by other causes of disease) distinctly trace a coincidence between the increments and decrements of

At all the Stations under review, the hottest months are the most unhealthy.

have had their correctness tested in several different ways ; and I believe that the Board may implicitly rely upon their accuracy. I will not speak so confidently of the 'Averages.' I am almost certain that they are without error, but, being of small statistical value, less pains has been taken with them."

One or two unimportant passages have been omitted from the Remarks, but, with this exception, the communication is published in the state in which it was received from its most meritorious and industrious author.—*Secretary.*

sickness, (in the aggregate) and that of mean temperature. In the Poona division they exactly agree. Dividing the year as near to the equinoxes as practicable, as in Table F. 2, the admissions are seen to be most numerous from April to September, the excess of treated in each 1000 men during this period being—at Poona, 189.751 ; at Deesa, 178.837 ; at Bombay, 53.390 ; at Belgaum, 52.169 ; and at Aden, 17.189. The difference between the admissions of the two periods is thus seen to be greatest at Poona and Deesa ; and it may be useful to observe, also, that this larger total of the hot and wet months is not the result of an over-preponderance of one or two prevailing maladies, but that at both these stations the admissions from every disease in the tables are greatest from April to September.

At Poona and Deesa, the admissions from every disease in the Tables greatest between April and September.

At Aden, where there is the least difference in the total admissions of the two periods, the small excess of treated from April to September is the result of numerous admissions from fevers : all other diseases, (except cholera,) prevail to the greatest extent in the opposite six months. This agrees, on the whole, with the remarks of Dr. Chimmo, in his report of the 20th Regt. M. N. I. He says :—" During the hot season there is less sickness than during the cold ;" and " the only prevalent disease during this season [viz. the hot] is bilious fever."

The healthiest months, estimating salubrity by the number of admissions, are—January at Poona and Deesa ; February at Belgaum, Aden, and Bombay. The most unhealthy are—May at Belgaum ; June at Aden ; July at Poona ; and October at Deesa and Bombay. The sum of the admissions in the 5000 men, 1000 at each station, amounts to 5122.883 from April to September, and 4631.537 from October to March—total for the whole twelve months 9754.420, being a little short of two admissions for every unit of strength.

The healthiest and unhealthiest months of each Station noticed.

The sum of the deaths at the whole five stations is 226.434, being an average of 45.287 for each station, and 4.528 per cent.

Per-centage of deaths at the different Stations, and large mortality of Bombay.

of the strength. The per-centages of deaths at the different stations are as follows : Bombay, 9.6204 (more than double the average) ; Poona, 3.2115 ; Belgaum, 2.8667 ; Deesa, 3.2068 ; and Aden, 3.7380. It is thus apparent, that the mortality of Bombay is three-fold that of Poona, Belgaum, or Deesa. This is a most surprising difference, and I regret much that I am unable, from my memoranda, to determine exactly what ought to be deducted from this comparatively enormous mortality on account of invalids, and the few men sometimes sent down for change of air ; amongst whom there must have been some whose ailments would have unavoidably proved fatal anywhere, and whose removal, therefore, merely reduced the average mortality of the station they came from, to add to that of the Presidency. For each casualty occurring in this manner, we may reasonably deduct two from the difference ; yet, after every deduction and allowance that can fairly be made, it will still be found, that the mortality amongst the troops stationed at the Presidency, partly from the nature of the climate, partly from facilities for excesses, fearfully exceeds that of every other station. Take the deaths of the monsoon months alone, and they are found to amount to 33.225 per thousand of strength, (3.3225 per cent.,) which exceeds the mortality of Poona, Belgaum, or Deesa, for the whole year. Again : deduct *every* death which has occurred at Bombay during November, December, January and February, months when the invalids are usually present, and the mortality of the remaining eight months is 6.070 per cent., or but little short of double the average *annual* mortality of the three stations just named. It therefore necessarily follows that we may safely, and with an assurance of being within the mark, estimate the mortality of the Presidency to be two-fold that of Poona, Belgaum, or Deesa ; and, perhaps, as will appear by-and-bye, of Aden also. While on the subject, I may further draw attention to the fact that the maximum mortality from every disease in the tables is

The deaths at Bombay in June, July, August, and September, exceed those of Poona, Belgaum, or Deesa, for the whole year.

at Bombay; and, in most instances, the fatality for six months is above that of other stations for twelve.

As a measure of the salubrity of a station for such a short period as a month, the number of admissions may be considered the best—at least the best at command; but, for more extended periods, its value is more than questionable; for, as has been remarked by Colonel Sykes—"one soldier goes twelve times into hospital during the year, and in the total of admissions counts as twelve men; while another soldier remains in the hospital the whole twelve months, and counts only as one admission. No statistical law, therefore, can be legitimately deduced from the mere total of admissions into hospital." Again, the number of admissions may sometimes be materially influenced by chance circumstances, independent of climate, peculiar to one locality much more than another; such, for instance, as an unusual prevalence of syphilitic affections. I have been led to notice this source of error, from finding it actually to exist in the present tables. The admissions from syphilitic complaints in the Poona division considerably exceed, and are very frequently double the ratio of the other stations; and it consequently follows, that did we take the total admissions as a measure of its salubrity, we should be crediting the climate with the production of a large amount of disease in reality engendered by the habits of the residents. Results, then, founded upon a comparison of the total admissions of stations not similarly circumstanced in this respect must be erroneous.

The total admissions of Stations frequently influenced by chance circumstances, unconnected with climate, and therefore not a safe criterion of its salubrity.

We therefore resort to the aggregate mortality as the best available test of salubrity, and, allowing it to be so, Belgaum is found to be the healthiest station, Deesa next, then Poona, then Aden, and, lastly, Bombay.

One would hardly have expected to find Deesa healthier than Poona; and, considering the difference between them, both in climate and the prevailing causes of mortality, it is rather remarkable that in 1000 men at each station, an average of 17

Deesa in a trifling degree healthier than Poona.

years should only show a barely appreciable difference in the aggregate ratio of mortality.

The mortality at Aden, it will have been seen, is the greatest, excepting Bombay, but there is promise that it will ultimately show itself to be the healthiest station of the whole. The fatality during the seven years which its tables embrace has been as follows; and, for a convenient comparison, I have placed in a parallel column instances of the per-centage of mortality among British and foreign troops in other parts of the world, as given by Colonel Tulloch :—

Under more extended observations, Aden may prove to be the healthiest Station.

Years.	Annual Mortality per Cent. at Aden.	Mortality per Cent.		
1839	5.3287			
1840	5.1227			
1841	4.0029			
1842	5.2993			
1843	1.0870	1.17	In the Prussian Army.....	Page 33
1844	1.5528	1.55	„ Troops in Ireland....	
1845	2.2186	2.20	„ White Troops, Gibraltar..	„ 6

It is thus apparent that the larger per-centage of mortality is due to a considerable fatality during the first four years of occupancy,—the average mortality of the remaining three years is out of all comparison less than at the other stations. In 1845, it was on a par with the per-centage of mortality among the white troops at Gibraltar; in 1844 with the troops in Ireland; and in 1843 it was even less than that of the Prussian army, which is the minimum mortality given by Colonel Tulloch. But a low mortality for only three years consecutively is not conclusive, and comparisons of every kind can be more fairly and legitimately made after a more extended series of observations have been obtained. As bearing on the question, it would be extremely

interesting to know the ratio of mortality at Aden during 1846, and onwards to the present time.

Cholera almost unknown at Aden.

One very great advantage that the station has is its immunity from cholera. Setting aside ratios, and so forth, as given in the tables, it may be here simply stated, that between 1839 and 1845, inclusive, or during a period of seven years, the total number of admissions from the above malady have been only three, and the deaths one.

Proceeding next to review the relative mortality of particular maladies, and taking the sum of the five stations together, it is seen that in every hundred deaths the proportion from each disease is as follows :—

Relative mortality of each of the principal Diseases.

Dysentery	28.527
Fevers	23.054
Cholera	10.320
Hepatic Affections	9.595
Pulmonic Affections	5.807
Diarrhœa	3.914
All other diseases	18.697
Lost by decimals during calculation	.086
Total	99.914

The relative mortality of these diseases at the several stations are noticed elsewhere.

The average ratio of mortality in every 1000 of strength for the whole five stations is as follows :—

The ratio of Deaths to Strength from each Disease : an average of the five Stations together.

Dysentery	12.919
Fevers	10.440
Cholera	4.674
Hepatic Affections	4.345
Pulmonic Affections	2.630
Diarrhœa	1.772
All other diseases	8.467
Lost during calculation	0.040
Total	45.287

The proportion of deaths to strength from each disease at the different stations also appears in other places, but I am anxious to bring that of Bombay together into one view, for the purpose of contrasting it with the annual ratio of mortality, as it was found to be some years ago, a memorandum of which I have just now found among my papers, extracted from the *Transactions of the Medical and Physical Society of Bombay*, from June to October 1836.

	Annual Ratio of Mortality in each 1000 of Strength at Bombay:	
	As given in the Proceedings of the Medical & Physical Society, June to October 1836.	As found to be by the present calculations.
Fevers	15.0	19.396
Diseases of Lungs	2.4	5.588
„ of Liver	5.0	7.688
„ of Bowels	16.1	33.699
Cholera	10.3	13.048
Other Diseases	5.10	16.745
Total Annual Mortality	54.8	96.204

The difference between the two columns is so very great, that I doubted the accuracy of my figuring, till I had ascertained the cause, and tested previous calculations by the construction of the following

Table, showing the Annual Ratio of Mortality per 1000 *of Strength at Bombay, in each year, from* 1830 *to* 1846.

Year.	Average Strength.	Total number of Deaths.	Annual Ratio of Deaths per 1000 of Strength.	
1830	920	48	52.1	
1831	945	44	46.5	
1832	1142	57	49.9	
1833	1030	72	69.9	Average of 9 years 61.7, or 6.17 per cent.
1834	868	44	50.6	
1835	861	61	67.9	
1836	1441	66	45.8	
1837	1004	118	117.5	
1838	786	48	61.0	
1839	985	106	107.6	
1840	776	111	143.0	
1841	1153	158	137.0	
1842	952	194	203.7	Average of 8 years 147.2, or 14.72 per cent.
1843	852	167	196.0	
1844	678	122	179.9	
1845	1246	156	125.2	
1846	782	79	101.0	
Total.	16458	1651	100.3	

This table is not perfectly correct,* but it is sufficiently so for all practical and useful purposes. It not only proves the general accuracy of both columns in the preceding one, but affords some interesting information as to the fearful increase of mortality at the Presidency since 1839. During the first nine years

* It exceeds by about 4. the ratio of mortality given in the table for Bombay, marked A, partly from the decimal numbers of the strength having been dropped when using it as a divisor, and partly, perhaps, from one containing the deaths of seventeen months of January, while the other contains but eight.

Bombay more unhealthy of late years.

of the table the per-centage of mortality to strength was only 6.17, but in the last eight it stands at 14.72. Again, we are reminded that there are deductions necessary, (their extreme amount has already been referred to,) but from such ratios of mortality as 17, 19, and 20 per cent., of the strength, there is ample room for all reasonable deductions, and still leave a rate of mortality almost unparalleled.

How much of this is due to the more frequent arrival of fresh regiments from Europe ; how much to particular circumstances in the site of the barracks and accommodation of the troops ; how much to climate; how much to moral causes ; and, above all, how much is remediable and how much is not, are all questions of deep interest. The subject generally as to why Bombay has become more unhealthy latterly, and why there is such a very wide difference between its ratio of mortality and that of other stations, is well deserving of a patient and careful investigation, by some one who can do it with ability, and not in the imperfect manner in which it has been above noticed.

The proportion of deaths to treated next requires remark. The largest per-centage is at Bombay, and the smallest at Poona; but it does not appear to me that the total per-centage of deaths to treated can fairly be used for comparison, one with the other, in testing the general fatality of disease at the different stations, as it is too materially influenced by the prevalence or otherwise of syphilitic and rheumatic affections, ulcers, diseases of the eye, skin, &c., and other maladies which seldom prove fatal. A nearer approximation to the truth may be obtained by throwing out the columns of "Other Diseases," and making a total of the remainder, which, fortunately for the purpose, includes about five-sixths of the total mortality. The proportion of deaths to treated will then stand as follows :—

At Bombay.....	4.300	per cent.
At Poona.....	2.778	„
At Belgaum..	2.888	„

At Deesa.....	2.993	per cent.
At Aden.....	3.675	„
Average of the whole..	3.657	„

It would appear from this, that diseases generally, once engendered, are more fatal at Deesa and Aden, than in the milder climates of Poona and Belgaum.

Taking the five stations together, and using their total columns, the proportion of deaths to treated is found to be 2.321 per cent. Including all the European troops of the Bombay Presidency, wheresoever serving, between the same years, it amounts to 2.675 per cent.*

Value of the Tables would have been much increased by the addition of detailed Meteorological Observations.

In conclusion, I may be permitted to remark how much the value of the tables would have been enhanced by the addition of a series of accurate meteorological observations, and more particularly if in them the elucidation of the laws of meteorological science had been made subservient or secondary to determining the causes of disease,—in other words, the different phenomena attended to and detailed, not in the order of their meteorological importance, but according as they are believed to bear more or less upon the human constitution.

But, with the general meteorological data at command, there are observable two or three apparent points of connexion between atmospherical influences and disease, which, although they may not be pointed to as cause and effect, may be mentioned merely as coincidences.

The increment and decrement in the number of admissions with the rise and fall of mean temperature has already been noticed.

A period of great fatality succeeds the setting in of the mon-

* Bombay appears to have an advantage in this respect over the other two Presidencies. The per-centage of deaths to treated in the Madras Presidency, from 1825 to 1844, inclusive, calculated from the total admissions and deaths given in Colonel Sykes' tables, is found to be 2.867. That of Bengal rises as high as 4.129. The average is 3.223 per cent., and we may, therefore, roughly estimate the deaths throughout India to be $3\frac{1}{5}$ per cent. of the treated.

soon, and seems in some measure dependent upon it. The maximum monthly mortality at Poona and Belgaum is in July; at Deesa in September; and at Aden, where there is no regular monsoon at all, in December and January, as in England. Again: the most careless and indifferent observer knows that there are two periods of the year beyond others unusually sickly, (two maxima in the prevalence of diseases,) in May, June, or July; and again in a smaller degree in October and November. That the time of the first in particular is dependent upon the addition of an atmosphere loaded with vapour to a high mean temperature, appears probable, from what is observed at Deesa, where the rains, setting in later, the two sickly periods are, in a manner, merged into one, making July, August, September, and October, the four most unhealthy months of the year. But what I wish particularly to refer to here is, that the rule holds good for Aden also. Whether at Bombay, with its average fall of 75 inches of rain, or at Poona, with only 25, or at Aden, with hardly any rain at all, the first maximum is nearly, and the second exactly coincident.

The increase and decrease of sickness generally, and decrease and increase of atmospheric pressure at Poona, happens to correspond. Col. Sykes says:—"The maximum pressure of the barometer at Poona is in January, the minimum in July." Let the words maximum and minimum change places, and the sentence will accurately describe what is the case in regard to disease. Again: "The barometric readings, when protracted, show a gradual curve from December or January, *descending* to June or July, and then *ascending* again to December or January." Again, as in the preceding quotation, let two words change places, (ascending and descending,) and, with a slight exception, in October, we have a correct account of the rise and fall in the number of admissions.

Table F 1.

Table showing the Total Annual Ratio of Deaths to Treated, at the several Stations.

	Annual Ratio of Admissions per 1000 of Strength.	Annual Ratio of Deaths per 1000 of Strength.	Proportion of Deaths to Treated.
Bombay.....	2662.334	96.204	One in 27.673
Per cent....	.....	.....	3.613
Poona.....	2138.309	32.115	66.582
Per cent....	.....	.....	1.501
Belgaum.....	1683.607	28.667	58.729
Per cent....	.....	.....	1.702
Deesa.....	1766.563	32.068	55.088
Per cent....	.....	.....	1.815
Aden.....	1503.607	37.380	40.224
Per cent....	.....	.....	2.486
Total....	9754.420	226.434*	One in 43.078
		Per cent.....	2.321

Total per-centage of deaths to treated, including Scinde...2.675.

Two calculations for the proportion of deaths to treated may seem a superfluity. Tables such as these are worse than useless if not perfectly correct, and the one was worked out to test the correctness of the other; and, standing ready calculated in my rough copy, it was thought as well to give an option by inserting both.

* Deaths to strength per cent. 4.528.

Table F 2.

Table showing the Ratio of Admissions and Deaths to Strength, at the several Stations, in Half-Yearly periods.

Stations.		Ratio of Admissions per 1000 of Strength.	Ratio of Deaths per 1000 of Strength.	Excess of Admissions.	Excess of Deaths.
Bombay.	April to September ..	1357.862	46.000	53.390	
	October to March ..	1304.472	50.204		4.204
	Total Annual Ratio..	2662.334	96.204		
Poona.	April to September ..	1164.030	19.794	189.751	7.473
	October to March ..	974.279	12.321		
	Total Annual Ratio..	2138.309	32.115		
Belgaum	April to September ..	867.888	16.198	52.169	3.729
	October to March ..	815.719	12.469		
	Total Annual Ratio..	1683.607	28.667		
Deesa.	April to September ..	972.700	15.024	178.837	
	October to March ..	793.863	17.044		2.020
	Total Annual Ratio..	1766.563	32.068		
Aden.	April to September ..	760.403	16.886	17.199	
	October to March ..	743.204	20.494		3.608
	Total Annual Ratio..	1503.607	37.380		
Total.	April to September ..	5122.883	113.902	491.346	1.370
	October to March ..	4631.537	112.532		
	Grand Total.....	9754.420	226.434		

FEVERS.

Table G 1.

	Annual Ratio of Admissions per 1000 of Strength.	Annual Ratio of Deaths per 1000 of Strength.	Proportion of Deaths to Treated.	Proportion of Deaths to the aggregate Mortality.
Bombay	956.969	19.396	One in 49.338	One in 4.959
Per cent..	.....	.....	2.026	20.161
Poona	579.610	6.481	89.432	4.955
Per cent..	.....	.....	1.118	20.180
Belgaum	433.654	4.782	90.684	5.994
Per cent..	.....	.....	1.102	16.681
Deesa	597.105	13.435	44.443	2.386
Per cent..	.....	.....	2.250	41.895
Aden	499.843	8.109	61.640	4.609
Per cent..	.....	.....	1.622	21.693
Total..	3067.181	52.203	One in 58.754	One in 4.337
		Per cent....	1.702	23.054

TABLE G 2.

Stations.		Ratio of Admissions per 1000 of Strength.	Ratio of Deaths per 1000 of Strength.	Excess of Admissions.	Excess of Deaths.
BOMBAY.	April to September ..	491.341	9.919	25.713	0.442
	October to March ..	465.628	9.477		
	Total Annual Ratio..	956.969	19.396		
POONA.	April to September ..	311.760	3.078	43.910	
	October to March ..	267.850	3.403		0.325
	Total Annual Ratio..	579.610	6.481		
BELGAUM	April to September ..	213.866	2.181		
	October to March ..	219.788	2.601	5.922	0.420
	Total Annual Ratio..	433.654	4.782		
DEESA.	April to September ..	329.871	6.001	62.637	
	October to March ..	267.234	7.434		1.433
	Total Annual Ratio..	597.105	13.435		
ADEN.	April to September ..	277.077	4.609	54.311	1.100
	October to March ..	222.766	3.500		
	Total Annual Ratio..	499.843	8.109		
Total.	April to September ..	1623.915	25.788	180.649	
	October to March ..	1443.266	26.415		0.627
	Grand Total	3067.181	52.203		

There was no distinction of fevers in the returns earlier than 1839, and they are therefore necessarily classed under one head, which includes all but eruptive fevers. The total ratio of admissions during the year from 5000 men, 1000 at each station, has been 3067.181, or about three in every five of the strength. The total ratio of deaths 52.203, or an average of 10.440 in each thousand.

The first thing which attracts attention is the very great preponderance of admissions at Bombay over every other station; and, from comparisons with the other stations, it appears that this large annual ratio (956.969) is not merely the result of outbursts at one particular period of the year, with an immunity at others, but that the admissions exceed those of *Deesa in every month of the year*, those of Belgaum and Aden 11 months out of 12, and those of Poona 10 months out of 12. The average severity of each attack is also greater than at Poona, Belgaum, or Aden, as evidenced by the proportions of deaths to treated; indeed, the difference between the two first-named and the Presidency is very remarkable, the deaths at Bombay being 1 in every 49 of the treated, while at Poona and Belgaum they are only 1 in every 89 and 90 respectively.

The total ratio of mortality, (19.396,) rising as it does much above that of Guzerat, (Deesa,) was so unexpected, that I went over all my calculations repeatedly, under the impression that there must be a mistake somewhere; but when we recall to recollection the fearful sufferings of H. M.'s 17th Regt. in 1841, H. M.'s 28th Regt. in 1843, H. M.'s 2nd Regt. in 1845, and H. M.'s 22nd Regt. in 1846, when on more than one or two occasions it happened that one-third or so of a regiment were received into hospital from fever alone in a single month, and the mortality has risen to $2\frac{1}{2}$ and 3 per cent. per mensem, the fact seems very sufficiently accounted for.

Deesa stands next in the number of admissions and fatality. Fever, indeed, is *the* disease of the station, and the mortality in proportion to the number treated is even greater than at the Presidency, and double that of Poona or Belgaum. More deaths occur at Deesa, from fever alone, than from pulmonic affections,

diarrhœa, dysentery, cholera, and hepatitis, added together. Next in the number of admissions is Poona; but the mortality is small, being only 6.481 in the year from 1000 men.

At Belgaum we find the minimum of all the columns,—the smallest number of admissions and deaths, the smallest per-centage of deaths to treated, and the smallest ratio of deaths to the aggregate mortality. The deaths, in particular, are low, being but little more than half those of Aden, which approaches nearest to it in the number of admissions; and the very small proportion of fatal cases in the number treated, only 1.102 per cent., leads naturally to the conclusion that the majority of the admissions are of a simple ephemeral type, having no specific cause, but arising from excesses, exposure, over-fatigue, &c. and terminating favourably in from one or two to seven days,—in short, Dr. Jenner's febricula.

We see the effects of heat in the steady increasing number of admissions with mean temperature.

Now, turning to the tables, we find in the first-mentioned period fevers, ephemeral, simple, and uncomplicated,—otherwise, precursory or symptomatic of visceral affections, ranging, as far as the mere number of admissions is concerned, with an intensity unequalled at any other period of the year. In the second period (October), fevers are again numerous. The admissions are fewer in number, but the mortality is greater,—as regards the proportion of deaths to strength, as regards the proportion of deaths to treated, and also in reference to the severity and fatality of the congestive diseases which follow.

The division of the year near the equinoxes, followed in Table G 2, happens to include one of these fever periods in each, and we find, taking the five stations together, that the admissions number 1623 from April to September, but only 1443 from October to March. In the first period the deaths are 25, in the second 26. During the monsoon, and the months immediately preceding it, the proportion of deaths to treated stand at 1.5 per cent., from October to March. The following table shows the per-centage of deaths to treated in the two half-yearly periods

at the several stations, and the only place where it is the lowest in the cold months is at Aden, an almost rainless station :—

	Deaths to Treated per cent.		
	Half Year from April to September.	Half Year from October to March.	For the Year.
Bombay	2.01	2.03	2.02
Poona	0.9	1.2	1.1
Belgaum	1.0	1.1	1.1
Deesa	1.8	2.7	2.2
Aden	1.6	1.5	1.6
Total	1.5	1.8	1.7

Fevers include 23.054 per cent., or a little less than one-fourth of the total mortality : it forms the largest proportion at Deesa (41.89 per cent.) ; the smallest at Belgaum. (16.68 per cent.) Bombay and Poona are nearly alike, it being about 20 per cent. at each.

PULMONIC AFFECTIONS.

Table H 1.

	Annual Ratio of Admissions per 1000 of Strength.	Annual Ratio of Deaths per 1000 of Strength.	Proportion of Deaths to Treated.	Proportion of Deaths to the aggregate Mortality.
Bombay.....	98.151	5.588	One in 17.564	One in 17.216
Per cent....	.....	.....	5.693	5.808
Poona.....	60.796	1.832	33.185	17.530
Per cent....	.....	.....	3.013	5.704
Belgaum.....	82.704	1.893	43.689	15.143
Per cent....	.....	.....	2.288	6.603
Deesa.....	52.376	1.874	27.948	17.112
Per cent....	.....	.....	3.578	5.843
Aden.....	35.093	1.964	17.868	19.032
Per cent....	.....	.....	5.596	5.254
Total....	329.120	13.151	One in 25.026	One in 17.065
		Per cent....	3.995	5.807

TABLE H 2.

Stations.		Ratio of Admissions per 1000 of Strength.	Ratio of Deaths per 1000 of Strength.	Excess of Admissions.	Excess of Deaths.
BOMBAY.	April to September..	47.933	2.912		0.236
	October to March ..	50.218	2.676	2.285	
	Total Annual Ratio..	98.151	5.588		
POONA.	April to September..	31.586	0.952	2.376	0.072
	October to March ..	29.210	0.880		
	Total Annual Ratio..	60.796	1.832		
BELGAUM	April to September..	40.488	0.651		
	October to March ..	42.216	1.242	1.728	0.591
	Total Annual Ratio..	82.704	1.893		
DEESA.	April to September..	28.066	0.861	3.756	
	October to March ..	24.310	1.013		0.152
	Total Annual Ratio..	52.370	1.874		
ADEN.	April to September..	15.068	0.860		
	October to March ..	20.025	1.104	4.957	0.244
	Total Annual Ratio..	35.093	1.964		
Total.	April to September..	163.141	6.236		
	October to March ..	165.979	6.915	2.838	0.679
	Grand Total.....	329.120	13.151		

Pulmonic Affections are, comparatively speaking, neither very prevalent or fatal at the stations under review. The annual ratio of admissions in 5000 men, equally distributed at the several stations, has been 329.120, giving an average of 65.824 for each thousand. The annual ratio of deaths has been 13.151, an average of 2.630 for each station. The proportion of deaths to treated has been 1 in every 25, or, more correctly, 3.995 per cent., and it forms 5.807 per cent. of the aggregate mortality. As in the other principal diseases, so in pulmonic affections, we find a considerable maximum of admissions, deaths, and proportion of deaths to treated, at the Presidency. Next to Bombay, in the number of admissions, is Belgaum, but the affections are generally of a mild character, as shown by the number of deaths, which are only 1 in 43.689 of the treated. At Poona the annual number of admissions per 1000 of strength stands at 60.796, and, as at Belgaum, though in a less degree, the attacks are on the average mild, the deaths being 1 in every 33 of the treated.

Passing from Poona and Belgaum to Deesa and Aden, stations with a higher mean temperature, and a drier atmosphere, we find the actual number of admissions to be less, but the mortality, in proportion to the number treated, is very much increased. This is more particularly noticeable at Aden : with an actual number of admissions considerably lower than Belgaum or Poona, the total mortality, and ratio of deaths to treated, is greater. At Poona 3 per cent. of the treated die, at Belgaum only 2, while at Aden it rises to 5.

At Bombay, Poona, Belgaum, and Deesa, places within the influence of the south-west monsoon, pulmonic affections are very prevalent and fatal during June, July, and August. At Poona and Deesa, the largest number of admissions are in the half-year from April to September ; and that the admissions from October to March predominate at Bombay and Belgaum, is not so much the result of the cold weather of December and January, as of the congestive fevers of October causing a large increment in the number requiring treatment in November, which is the month of maximum admissions at both these places.

At Aden, beyond the periodical visitations of the monsoon, we

find the admissions to occur just as in Europe; viz. large in January, decreasing steadily with the increment of temperature to July or August, and rising again to the end of the year. The same also with regard to the deaths. In July and August, months of very great fatality at the other stations, there are here no deaths at all during the seven years which its table embraces; on the contrary, by much the largest half of the yearly mortality occurs in the two months of December and January.

The monsoons on the one hand, with congestions and cold weather on the other, so equally balance matters, that we find very little difference between the admissions and deaths from April to September, and October to March. Those of the cold months, however, do predominate, in a slight degree, but it may be added, as showing the comparative influence of the wet and cold months, that at stations where the monsoons prevail, the sums of the admissions for June and July exceed those for December and January.

The following table shows pulmonic affections at Bombay to be most fatal in proportion to the number treated during the hot and wet months. At Poona both periods are alike. Pulmonic affections are extremely fatal, both generally and in proportion to the number treated, at Belgaum in January, and at Deesa in December; and at these stations the cold months predominate. At Aden, December and January are decidedly the most fatal months, in proportion to the number treated; but as there are no deaths at all in October, November, February, and March, the per-centage of deaths to treated, when examined in half-yearly periods, is lower from October to March than in the other six months:—

	Deaths to Treated per cent.		
	Half Year from April to September.	Half Year from October to March.	For the Year.
Bombay	6.0	5.3	5.69
Poona	3.0	3.0	3.01
Belgaum	1.5	2.9	2.28
Deesa	3.0	4.1	3.57
Aden	5.7	5.5	5.59
Total	3.8	4.1	3.99

DIARRHŒA.

TABLE I 1.

	Annual Ratio of Admissions per 1000 of Strength.	Annual Ratio of Deaths per 1000 of Strength.	Proportion of Deaths to Treated.	Proportion of Deaths to the aggregate Mortality.
BOMBAY.....	158.548	3.440	One in 46.089	One in 27.966
Per cent....	.....	.....	2.169	3.575
POONA.....	142.713	1.648	86.597	19.487
Per cent....	.....	.....	1.154	5.131
BELGAUM.....	52.360	0.659	79.453	43.490
Per cent....	.....	.....	1.258	2.299
DEESA.....	71.406	0.936	76.282	34.260
Per cent....	.....	.....	1.310	2.918
ADEN.....	67.187	2.180	30.819	
Per cent....	.....	.....	3.244	5.831
Total....	492.214	8.863	One in 55.535	One in 25.548
		Per cent....	1.800	3.914

TABLE I 2.

Stations.		Ratio of Admissions per 1000 of Strength.	Ratio of Deaths per 1000 of Strength.	Excess of Admissions.	Excess of Deaths.
BOMBAY.	April to September ..	83.722	1.242	8.896	
	October to March ..	74.826	2.198		0.956
	Total Annual Ratio..	158.548	3.440		
POONA.	April to September ..	95.479	1.134	48.245	0.620
	October to March ..	47.234	0.514		
	Total Annual Ratio..	142.713	1.648		
BELGAUM	April to September ..	29.778	0.545	7.196	0.431
	October to March ..	22.582	0.114		
	Total Annual Ratio..	52.360	0.659		
DEESA.	April to September ..	42.300	0.493	13.194	0.050
	October to March ..	29.106	0.443		
	Total Annual Ratio..	71.406	0.936		
ADEN.	April to September ..	29.188	0.843		
	October to March ..	37.999	1.337	8.811	0.494
	Total Annual Ratio..	67.187	2.180		
Total.	April to September ..	280.467	4.257	68.720	
	October to March ..	211.747	4.606		0.349
	Grand Total	492.214	8.863		

The total annual ratio of admissions from diarrhœa in 5000 men, equally distributed at the several stations, has been 492.214, which is an average of about 96 for each station. The largest ratio is, as usual, found at the Presidency; but the proportion of admitted to strength at Poona, although less than at Bombay, is still double that of any of the other three stations; the smallest ratio of admissions is at Belgaum.

The sum of the deaths for the five stations together is 8.863; average for each station 1.772, or 0.17 per cent. of the strength. The annual ratio of deaths in 1000 men has been—at Bombay, 3.440; Aden, 2.180; Poona, 1.648; Deesa, 0.936; and the minimum, at Belgaum, 0.659.

The proportion of deaths to treated is highest at Aden, and lowest at Poona. Taking all the stations together, it is 1.8 per cent.

The deaths from diarrhœa form about 4 per cent. of the total mortality from all causes. At Bombay it is 3.57; Poona, 5.13; Belgaum, 2.29; Deesa, 2.91; Aden, 5.83; and total 3.91 per cent.

The largest ratio of admissions for half-yearly periods at Bombay, Poona, Belgaum, and Deesa, is from April to September, at Aden from October to March. The months of maximum prevalence are—July at Bombay and Poona, August at Deesa, December at Aden, and May at Belgaum; minimum prevalence, January at Bombay and Poona, November at Belgaum and Deesa, and March at Aden. The months of maximum deaths are—March at Bombay, July at Poona, June or July at Belgaum, September at Deesa, and June at Aden; minimum deaths, May at Bombay, January or February at Poona, eight months none at all at Belgaum, the same for five months at Deesa, and six months at Aden. Returning to half-yearly periods, we find the deaths most numerous from April to September at Poona, Belgaum, and Deesa, and from October to March at Bombay and Aden.

Taking all the stations together, diarrhœa is most prevalent during the hot and wet months, but most fatal in the cold. The total ratio of admissions from April to September stands at

280.467, from October to March only 211.747. The deaths from April to September are 4.257, from October to March 4.606. The proportion of deaths to treated is greatest in the cold months: the per-centage in each half-yearly period at the several stations is shown in the following table :—

	Per-centage of Deaths to Treated.		
	Half Year from April to September.	Half Year from October to March.	For the Year.
Bombay	1.4	2.9	2.1
Poona	1.1	1.1	1.1
Belgaum	1.8	0.5	1.2
Deesa	1.1	1.5	1.3
Aden	2.8	3.5	3.2
Total	1.5	2.1	1.8

DYSENTERY.

TABLE J 1.

	Annual Ratio of Admissions per 1000 of Strength.	Annual Ratio of Deaths per 1000 of Strength.	Proportion of Deaths to Treated.	Proportion of Deaths to the aggregate Mortality.
BOMBAY	255.366	30.259	One in 8.439	One in 3.179
Per cent..	.....	.....	11.849	31.452
POONA	92.474	7.070	13.079	4.542
Per cent..	.....	.....	7.645	22.014
BELGAUM	154.534	11.145	13.865	2.572
Per cent..	.....	.....	7.212	38.877
DEESA	89.098	4.896	18.198	6.549
Per cent..	.....	.....	5.495	15.267
ADEN	103.082	11.226	9.192	3.329
Per cent..	.....	.....	10.890	30.032
Total..	694.554	64.594	One in 10.752	One in 3.505
		Per cent....	9.300	28.527

TABLE J 2.

Stations.		Ratio of Admissions per 1000 of Strength.	Ratio of Deaths per 1000 of Strength.	Excess of Admissions.	Excess of Deaths.
BOMBAY.	April to September ..	104.894	9.216		
	October to March ..	150.472	21.043	45.578	11.827
	Total Annual Ratio ..	255.366	30.259		
POONA.	April to September ..	60.022	3.885	27.570	0.700
	October to March ..	32.452	3.185		
	Total Annual Ratio ..	92.474	7.070		
BELGAUM	April to September ..	96.627	7.645	38.720	4.145
	October to March ..	57.907	3.500		
	Total Annual Ratio ..	154.534	11.145		
DEESA.	April to September ..	46.197	1.477	3.296	
	October to March ..	42.901	3.419		1.942
	Total Annual Ratio ..	89.098	4.896		
ADEN.	April to September ..	36.881	3.111		
	October to March ..	66.201	8.115	29.320	5.004
	Total Annual Ratio ..	103.082	11.226		
Total.	April to September ..	344.621	25.334		
	October to March ..	349.933	39.262	5.312	13.928
	Grand Total	694.554	64.596		

Dysentery destroys more men than any other disease. The total ratio of deaths in the 5000 men under review amounts to 64.596, being an average of 12.519 for each station, or about 1¼ per cent. of the strength, and 9 per cent. of the treated. At Bombay it includes about 31 per cent. of the total mortality; at Poona 22; at Belgaum 38; at Deesa 15; and at Aden 30; giving an average per-centage for the whole of 28.527. Fever and dysentery together, ever the most formidable and fatal maladies of tropical climates, carry to the grave the largest half of all that die, the remainder being shared amongst all other diseases.

The sum of the admissions for the five stations is 694.554; the maximum ratio of admissions being at Bombay, the minimum at Deesa. Next to Bombay in the number of admissions is Belgaum. Indeed, dysentery is peculiarly the prevailing complaint of the station, and it is distinguished from the disease as it occurs at other stations, by prevailing far more frequently in a chronic form, and by being in almost every instance conjoined with disease of the liver. The patient perishes either from an hepatic abscess, or from ulceration and mortification in the course of the colon, but it is often difficult to say which has been the more immediate cause of death; for in nine cases out of ten, dissection reveals both viscera in a state of extreme disease, each sufficient, in the absence of the other, to produce a fatal termination. I write from what came under my own observation while at Belgaum in 1837 and 1838, with H. M.'s 2nd, or Queen's Regt. The deaths noted as occurring from dysentery amount to nearly 39 per cent. of the total mortality; those from hepatitis to about 12 per cent., and the two diseases together thus include more than half the aggregate mortality of the station. An apparent connection or dependence of one disease upon the other is observed in Table C. Hepatitis attains its maximum prevalence in June, and maximum fatality in July. Dysentery has most admissions in July, the greatest number of deaths in August. The second-named disease is in both respects a month behind the first.

Passing on to Deesa, we find dysentery a comparatively rare disease. At that station is seen the minimum number of admissions and deaths, the minimum per-centage of deaths to treated,

and the minimum per-centage of deaths to aggregate mortality. This latter contrasts very widely with Belgaum; and, carrying on the comparison between the two stations, it may not be out of place here to notice the disparity between them as regards the prevalence of fever and dysentery. At Deesa, fevers are numerous and fatal, while dysentery is comparatively rare. At Belgaum, the very opposite of this is found, dysentery being remarkably prevalent and fatal in its character, while fevers are few in the number of admissions and deaths, and the average severity of each attack trifling. At Aden, which is next in the number of admissions, the ratio of treated in each thousand of strength amounts to 103.082. At Poona it is 92.472, and at Deesa 89.098, which, as before stated, is the minimum.

The number of deaths per 1000 of strength at Bombay, 30.259, is enormously large, being more than any other three stations added together; and the average ratio of deaths for the single month of December is more than that of Poona or Deesa for the whole year. The deaths amongst the unfits, which, unfortunately, I have not the means of separating, no doubt add to the fatality, but not so much as would be imagined from a hasty conclusion. There doubtless have been among the invalids many instances of diseased and debilitated men, who, in the effort to reach their native land, only swell the total mortality of the Presidency,—men already suffering from chronic dysentery, or with constitutions debilitated from recent Scinde fever, and, therefore, pre-disposed to a disease which the excesses usually indulged in by unfits rapidly engender. But this can only account for a very small fraction of the difference between Bombay and the other stations.

The mortality has, in truth, followed upon those terrible visitations of fever with which the troops at Colaba have been occasionally afflicted. As happened during the fearful havoc among the 78th Highlanders in Scinde, so also in Bombay, it has invariably occurred, that three, four, or five weeks from the outburst of fever, dysentery appears, also aiding in the work of destruction, and increasing in intensity, until it speedily becomes the more prevalent disease of the two.

One of the most remarkable instances of this occurred in H. M.'s 28th Regiment, stationed at Colaba, in the end of 1843. The regiment had upwards of 200 admissions from fever in November, but only 28 or 30 from dysentery. During December, the admissions from fever had doubled, but the number suffering from dysentery had increased six or seven fold. By the succeeding month, January, fever had abated, and dysentery was the principal disease. Never, perhaps, was dysentery so fatal at Bombay as during the period just referred to. In December 1843 and January 1844 there were at the Presidency H. M.'s 28th Regt., a detachment of the 2nd European Light Infantry, the unfits, and the few men of the 2nd Battalion Artillery usually in Fort George ; the average strength for the two months being 1182. From this small number, the admissions from dysentery alone were 394, the deaths 70. And, as showing the prevalence of disease generally, it may be added that the total admitted from all causes was 1728, (500 more than the average strength,) the deaths 122. Next to Bombay in the number of deaths is Aden, then Belgaum, then Poona, and, last of all, Deesa.

Summing the five stations together, the mortality is found to be 9.300 per cent. of the treated.

Viewing the disease in half-yearly periods, and taking the sum of the five stations together, we find the admissions and deaths between October and March preponderating over those of the six hot and wet months. The admissions are most numerous between April and September at Poona, Deesa, and Belgaum, and in the other half-yearly period at Aden and Bombay. The deaths, again, are greatest between April and September at Poona and Belgaum, and between October and March at Deesa, Aden, and Bombay. As a general rule, there always is a rise in the number of admissions and deaths from dysentery about November, December, and January ; but this can hardly be attributed to the meteorological conditions of these months : a far more probable supposition is, that it follows, and is dependent upon the congestive fevers which mark the close of the monsoon. The more numerous the admissions from fever in October, the more prevalent is dysentery in December.

It must, however, be added, that the dysentery of December and January is more fatal (and particularly in proportion to the number attacked) than that of May, June, and July. From the following little table, showing the per-centage of deaths to treated in the two half-yearly periods at the different stations, it appears that it is so generally, and at four of the five stations, the exception being Belgaum :—

	Per-centage of Deaths to Treated.	
	Half Year from April to September.	Half Year from October to March.
Bombay	8.7	13.9
Poona	6.4	9.8
Belgaum	7.9	6.0
Deesa	3.1	7.9
Aden	8.4	12.2
Total	7.3	11.2

TABLE K 1.

Table showing the Ratio of Admissions and Deaths to Strength from Spasmodic Cholera, for each Month, among the European Troops stationed at Bombay, Poona, Belgaum, Deesa, and Aden, between the Years 1839 *and* 1846.

	BOMBAY. Average of 8 years.			POONA. Average of 8 years.			BELGAUM. Average of 2 years, 1843 & 1846.			DEESA. Average of 8 years.			ADEN. Average of 7 years.			TOTAL.			Total Ratio of Admissions.		Total Ratio of Deaths.			
	Ratio of Admissions per 1000 of Strength.	Ratio of Deaths per 1000 of Strength.		Ratio of Admissions per 1000 of Strength.	Ratio of Deaths per 1000 of Strength.		Ratio of Admissions per 1000 of Strength.	Ratio of Deaths per 1000 of Strength.		Ratio of Admissions per 1000 of Strength.	Ratio of Deaths per 1000 of Strength.		Ratio of Admissions per 1000 of Strength.	Ratio of Deaths per 1000 of Strength.		Ratio of Admissions per 1000 of Strength.	Ratio of Deaths per 1000 of Strength.		April to September.	October to March.	April to September.	October to March.	Deaths to Treated per cent. between April and September.	Deaths to Treated per cent. between October and March.
January ..	0.619	....	Deaths to Treated per cent. 41.20.	Not known.		Deaths to Treated per cent. 40.95.	Not known.		Deaths to Treated per cent. 51.88.	....	....	Deaths to Treated per cent. 51.89.	....	....	Deaths to Treated per cent. 42.50.	0.619	....							
February ..	0.598	0.149		0.296	....		....	....		0.141	0.141		0.234	....		1.289	0.290							
March	4.093	1.662		0.511	0.255		....	....		0.134	....		....	....		4.738	1.917							
April	4.316	2.324		4.178	1.377		....	....		0.392	....		....	....		8.886	3.701							
May.....	4.019	2.153		7.819	3.485		....	....		0.129	....		....	....		11.967	5.638							
June	7.060	4.292		5.225	1.545		....	....		0.130	....		....	....		12.415	5.837							
July	2.456	0.433		4.811	2.583		0.573	0.573		0.260	0.200		....	....		8.100	3.849							
August....	11.916	4.333		2.504	1.335		....	....		0.945	0.270		....	....		15.365	5.938							
September..	7.865	2.776		0.784	0.392		....	....		1.321	1.056		0.274	0.274		10.244	4.498							
October ..	1.860	0.265		0.492	0.082		....	....		....	....		....	....		2.352	0.347							
November..	0.709	0.303		0.179	0.044		0.539	0.539		....	....		....	....		1.427	0.886							
December..	0.690	0.345		0.621	0.133		....	....		0.133	0.133		....	....		1.444	0.611							
Total..	46.201	19.035		27.420	11.231		1.112	1.112		3.585	1.860		0.528	0.274		78.846	33.512		58.091	20.755	20.461	4.051	50.710	19.510

Table K 2.

Table of the Admissions from Cholera (Bilious and Spasmodic) among the European Troops of the Bombay Army, for each Month, from 1830 *to* 1846 *inclusive.*

	1830	1831	1832	1833	1834	1835	1836	1837	1838	1839	1840	1841	1842	1843	1844	1845	1846	Total.
January. ..	2	..	..	19	2	1	2	1	9	5	4	..	8	10	E 40	8	7	118
February ..	..	..	2	11	..	..	1	2	5	2	3	1	11	4	6	2	11	61
March.. ..	..	..	1	3	1	1	1	5	1	B 53	5	4	67	..	8	1	27	178
April.....	18	1	32	13	2	10	1	2	4	7	10	3	211	3	2	5	5	329
May.....	14	1	7	28	..	4	1	..	6	7	59	4	198	24	5	12	21	391
June.....	7	6	21	44	5	1	4	2	3	19	28	7	31	19	7	90	F 823	1117
July.....	3	22	25	48	9	2	16	3	6	19	4	11	14	10	74	53	41	360
August....	7	2	7	A 71	7	1	2	2	5	38	2	3	136	5	6	4	33	331
September..	1	..	2	1	9	..	..	2	8	15	..	8	D 315	4	12	2	11	390
October....	1	2	8	1	4	..	..	17	1	5	7	3	27	4	10	1	5	96
November..	1	1	..	2	1	3	2	21	2	C 82	2	3	25	3	36	4	3	191
December..	1	..	8	22	5	3	..	5	3	7	3	8	22	6	13	6	2	114
Total....	55	35	113	263	45	26	30	62	53	259	127	55	1065	92	219	188	989	3676

Remarks.

A Of which 66 at Bombay.
B Of which 52 in the Scinde Reserve Force, Kurrachee.
C Of which 80 among H. M.'s 4th Light Dragoons, sick and weakly men of the "Army of the Indus," on their return between the Desert and Sukkur.
D Of which 248 in Scinde, almost wholly at Kurrachee.
E Of which 35 at Colaba, principally in a sickly detachment of the 2nd Eur. Lt. Infantry, who were at the same time suffering severely and fatally from fever and dysentery.
F Kurrachee—Fusiliers, and H. M.'s 60th and 86th Regiments.

TABLE K 3.

	Annual Ratio of Admissions per 1000 of Strength.	Annual Ratio of Deaths per 1000 of Strength.	Proportion of Deaths to Treated.	Proportion of Deaths to the aggregate Mortality.	
BOMBAY...	42.410	13.048	One in 3.249	One in 7.373	17 years.
Per cent..	.....	.....	30.766	13.562	
POONA	22.104	6.387	3.460	5.028	17 „
Per cent..	.....	.....	28.895	19.887	
BELGAUM ..	6.661	2.476	2.691	11.577	10 „
Per cent..	.....	.....	37.171	8.637	
DEESA	4.159	1.184	3.512	27.084	17 „
Per cent..	.....	.....	28.468	3.692	
ADEN*....	0.528	0.274	1.927	136.423	7 „
Per cent..	.....	.....	51.893	0.733	
Total..	75.862	23.369	One in 3.246	One in 9.689	
		Per cent....	30.804	10.320	

* Spasmodic Cholera only.

TABLE K 4.

Stations.		Ratio of Admissions per 1000 of Strength.	Ratio of Deaths per 1000 of Strength.	Excess of Admissions.	Excess of Deaths.
POONA.	April to September..	19.519	5.957	16.934	5.527
	October to March ..	2.585	0.430		
	Total Annual Ratio..	22.104	6.387		
BOMBAY.	April to September..	34.063	10.817	25.716	8.586
	October to March ..	8.347	2.231		
	Total Annual Ratio..	42.410	13.048		
BELGAUM	April to September..	2.508	0.978		
	October to March ..	4.153*	1.498*	1.645	0.520
	Total Annual Ratio..	6.661	2.476		
DEESA.	April to September..	3.587	0.930	3.015	0.676
	October to March ..	0.572	0.254		
	Total Annual Ratio..	4.159	1.184		
ADEN.	April to September..	0.274	0.274	0.20	0.274
	October to March ..	0.254	....		
	Total Annual Ratio..	0.528	0.274		
Total.	April to September..	59.951	18.956	44.040	14.545
	October to March ..	15.911	4.413		
	Grand Total.....	75.862	23.369		

* All occurred in one year, 1837.

Cholera next presents itself as the subject of remark. The two great types of the disease, viz. the common bilious cholera, and malignant spasmodic cholera, were not distinguished from each other in the returns from hospitals earlier than 1839; I have, therefore, with the view of making the observations as extended as possible, and also of obtaining that particular kind of information most conclusive in investigating certain points, constructed separate tables—the one embracing all ailments returned as cholera between 1830 and 1846; the other spasmodic cholera alone, for 1839 and onwards.

Amount of Sickness and Mortality attributable to Cholera.

Taking the first (Table K 3) as the best guide in ascertaining the sum of the sickness and mortality, fairly attributable to cholera, we find, that in 5000 men equally distributed at the several stations, there will be an annual average ratio of about 75 admissions and 23 deaths. Of the admissions, 42 occur at Bombay, 22 at Poona, 6 at Belgaum, 4 at Deesa, and only $\frac{1}{2}$, or 1 admission in two years, at Aden. Of the deaths, there are 13 at Bombay, 6 at Poona, 2 at Belgaum, 1 at Deesa, and 0.274, or about one death in every four years, at Aden. We are immediately struck by the very wide difference in

Wide difference in the prevalence and Mortality of Cholera at the several Stations.

the prevalence and mortality of the disease at the several stations, and particularly between Poona and Belgaum—places so closely resembling each other in altitude, mean temperature, fall of rain, &c. &c. Is the wide extreme of prevalence and mortality between Bombay and Poona, and Deesa and Aden, attributable to peculiarities of climate, geological distinctions, or other causes; or, is it merely an accidental circumstance, that will vanish under observations for a more extended series of years? Arguments *against* the infectious nature of spasmodic cholera (except perhaps in a very slight degree) are too strong to be doubted, but if it were admitted that the germs of the disease may be conveyed from place to place by infected individuals,—"that this disease is never produced without the presence of a certain leaven, or morbific matter, emanating from the bodies of the affected, and, floating

in the air, respired by those about to be attacked,"*—the extremes of its prevalence and mortality at the several stations under review would (apparently) be readily accounted for, the tables showing it to prevail at each locality, in the same ratio as they may be supposed to have intercourse with other places, immediate and remote, according as they are more or less in the great lines of communication.

Proportion of Deaths to Treated.

Including both types, the average proportion of deaths to treated at the several stations from 1830 to 1846 has been about 30 per cent., and at each station as follows:—Bombay, 30 per cent.; Poona, 28; Belgaum, 37; and Deesa, 28. As would naturally be expected, from spasmodic cholera *alone*, the mortality in proportion to the number attacked is much higher. Between 1839 and 1846 it was, at Bombay, 41.20 per cent.; Poona, 40.95; Deesa, 51.88; and Aden, 51.89; average for the four stations 41.68. Again, in individual years it has been for all the European troops of the Bombay army—

In 1842	43.38	per cent.
1843	41.30	„
1844	58.75	„
1845	53.24	„
1846	51.02	„

And in instances when spasmodic cholera prevailed extensively—

Scinde, in April 1842	46.60	per cent.
Poona, in May 1842	41.23	„
Poona, in September 1842, 248 admissions, 118 fatal	47.58	„
Bombay, in January 1844, *among men already suffering severely from fever and dysentery*, 35 admissions, 27 fatal	77.14	„
Poona, in July 1844, 63 admissions, 32 fatal	50.79	„
Kurrachee, in June 1846, 814 admissions, 432 fatal	53.07	„

With the above data before us, may we not assume, that when

* Copland on Pestilential Cholera, page 63.

an extensive outbreak of spasmodic cholera occurs, even under the most favourable circumstances from 40 to 45 per cent. of those attacked will die?

Proportion of Deaths to the total Mortality.

Cholera (both types inclusive) in some years has not formed more than 1½ or 2 per cent. of the total mortality; but in 1842, including Scinde, it was about 47½, and in 1846 as many as 54. Taking all the European troops of the Bombay army, wheresoever stationed, between 1830 and 1846, it will stand at about 20.* For the five stations under review, during the same years it averages only 10 per cent., at each as follows: Bombay, about 13½; Poona, 20; Belgaum, 8½; Deesa, 3½; and at Aden, 0.73, or say ¾ per cent.

The general opinion (I believe) now is, that malignant spasmodic cholera is the production of a specific poison, which destroys the vitality of the blood, either directly, or through the nervous centres; but which it affects primarily cannot be satisfactorily determined, as the arguments on this point may be carried in a circle either way. What this poison is,—whether some undiscovered phenomena of telluric chemistry, animalculine blight, aerial, electrical, vegetable, or animal,—is also still a mystery; but, be it what it may, I think the tables go far to support the following conclusions, viz. that it is perfectly obedient to atmospherical influences, and, also, that although it may be present at any period, the peculiar atmospherical conditions of the months from April to September are favourable to its development, while those of the cold months are the reverse. Table K 2 shows, that

Spasmodic Cholera prevails most extensively between April and September, and is far more fatal, not only in the aggregate, but also in proportion to the number attacked.

with one or two very trifling exceptions, extensive outbursts of Cholera, (and all were spasmodic,) have occurred between April and September; and Table K 1 will show that the admissions during the same months, although occasionally very much above, are at no station less than three-

* Among the European troops of the Bombay army, between 1841 and 1848, (vide Dr. Buist's Annals of India, 1848,) it was 24.53 per cent. Among the European troops of the Madras Presidency, between 1842 and 1849, it formed 21.44 per cent. of the total mortality.

fourths of the average ratio for the whole year. Again, in the last columns of the same table we see the fatality in these months to be four-fold greater than from October to March, and of those attacked 50 per cent. die, while in the cold months the proportion is only 19 per cent.

Existing, thus, in a three or four-fold virulence and intensity, just when bilious cholera, dysentery, fevers, and the other principal causes of mortality, prevail most extensively, and *vice versâ*, may we not infer that its prevalence or otherwise is, equally with them, dependent upon certain changes in the temperature and constitution of the atmosphere ?*

Taking cholera generally, (that is, without distinction of types,) Table K 2 shows 2918 admissions from April to September, and only 758 from October to March ; a disparity between the two half-yearly periods out of all comparison greater than in any other disease. But the difference is not quite so great when Scinde is excluded. Table K 4, for the five stations it includes, shows between April and September about three-fourths of the admissions and deaths for the whole year ; and for the same months at the different stations as follows :—at Bombay 34 admissions, from an annual average ratio of 42 ; at Poona as many as 19, from an annual average ratio of 22 ; and at Deesa 3, from an annual average ratio of 4. Of the deaths there are, in the six months between April and September, at Bombay 10, from an annual total of 13 ; at Poona 5, from a total of 6 ; and at Deesa 9, from a total of 11.

* Perhaps no tables are needed to prove that the ravages of spasmodic cholera prevailing epidemically are far greater during the hot and rainy months than at other periods of the year. The fact is generally acknowledged. But I have devoted more attention to the subject than I otherwise might have done, from finding the following at page 349 Orton's Supplement :—" We have been told that the different seasons of the year and the various states of the weather have no influence on this epidemic. Even our most distinguished writers appear to have received these statements without question. Sir Gilbert Blane has inferred from these accounts, that it prevailed to *a degree equally virulent at all seasons of the year.* * * * Dr. Good says, during all the changes of the moon, and in all states of atmospheric electricity. Mr. Scott, in his Madras Report, says that cholera has appeared, and is equally virulent, during *all states of the atmosphere,* amidst all diversities of the surface of the country, also under every variety of the circumstances of the people. Again, the appearances of the epidemic at stations and in corps during cool and during hot weather *are very nearly equal in point of numbers,* but they have been doubly more frequent in dry than in wet weather."

HEPATIC AFFECTIONS.

Table L 1.

	Annual Ratio of Admissions per 1000 of Strength.	Annual Ratio of Deaths per 1000 of Strength.	Proportion of Deaths to Treated.	Proportion of Deaths to the aggregate Mortality.
Bombay.....	103.471	7.688	One in 13.493	One in 12.513
Per cent....	.....	.....	7.430	7.991
Poona.....	55.993	3.044	18.394	10.550
Per cent....	.....	.....	5.434	9.478
Belgaum.....	116.418	3.435	33.891	8.345
Per cent....	.....	.....	2.950	11.982
Deesa.....	37.771	3.153	11.979	10.170
Per cent....	.....	.....	8.347	9.832
Aden.....	61.053	4.407	13.853	8.481
Per cent....	.....	.....	7.218	11.789
Total....	374.706	21.727	One in 17.246	One in 10.421
		Per cent....	5.798	9.595

TABLE L 2.

Stations.		Ratio of Admissions per 1000 of Strength.	Ratio of Deaths per 1000 of Strength.	Excess of Admissions.	Excess of Deaths.
BOMBAY.	April to September ..	46.242	3.012		
	October to March ..	57.229	4.676	10.987	1.664
	Total Annual Ratio..	103.471	7.688		
POONA.	April to September ..	30.442	1.706	4.891	0.368
	October to March ..	25.551	1.338		
	Total Annual Ratio..	55.993	3.044		
BELGAUM	April to September ..	63.907	1.975	11.396	0.515
	October to March ..	52.511	1.460		
	Total Annual Ratio..	116.418	3.435		
DEESA.	April to September ..	22.041	1.489	6.311	
	October to March ..	15.730	1.664		0.175
	Total Annual Ratio..	37.771	3.153		
ADEN.	April to September ..	29.327	1.735		
	October to March ..	31.726	2.672	2.399	0.937
	Total Annual Ratio..	61.053	4.407		
Total.	April to September ..	191.959	9.917	9.212	
	October to March ..	182.747	11.810		1.893
	Grand Total	374.706	21.727		

Hepatic affections stand fourth among the great causes of mortality. The deaths from fever, dysentery, and cholera, are numerically higher—even to a double and treble extent in the two first.

The total ratio of admissions for all the stations together amounts to 374.706, being most numerous at Belgaum, and least so at Deesa. The deaths are 21.727, which is 0.43 per cent. of the strength. In 1000 men, the annual ratio of deaths has been, at Bombay 7.6, Poona 3.0, Belgaum 3.4, Deesa 3.1, and Aden 4.4, being highest at Bombay and lowest at Deesa.

Proportion of Deaths to the Treated.

In the total we find that of the treated 1 in every 17 dies. The proportion is *highest* at Deesa,—which, as above remarked, shows the lowest ratio of admissions and deaths to strength,—and *lowest* at Belgaum, where the treated are most numerous. The per-centage for each is as follows :—Deesa, 8.3 ; Bombay, 7.4 ; Aden, 7.2 ; Poona, 5.4 ; and Belgaum only 2.9. This latter per-centage,—hardly half or one-third that of other stations,—calls for some remark. Dropping decimal numbers, we find roughly that at Bombay, in every 25 admissions, there will be 1 from hepatic disease ; at Poona, 1 in every 38; at Deesa, 1 in every 47 ; at Aden, 1 in every 24 ; but at Belgaum, 1 in every 14 only. There is reason, therefore, for supposing, that at that station, in a greater degree than at any of the others, there is some cause in existence, independent of solar heat, intemperate indulgences, &c. &c., which specifically induces to hepatic derangements ;—and that these attacks are frequently of a chronic character, the subjects of which, by passing repeatedly in and out of hospital, numerically increase the admissions, and *so* reduce the per-centage of deaths to treated, is a far more probable supposition than that well-developed cases of acute hepatitis (whose termination shall be either perfect recovery or death) are on the average less fatal at Belgaum than elsewhere.

Another cause of the small per-centage of deaths to treated may be, that dysenteric symptoms occasionally supervene *after* admission into hospital under hepatitis, and the disease is then changed on the returns to that which, from the peculiar nature

and urgency of its symptoms, naturally will most deeply engross the attention both of the patient and his medical attendant; and, when the disease is changed at all, it will be done most frequently in those cases which ultimately prove fatal.

The months of maximum prevalence are—at Bombay, January; Poona, May; Belgaum, June; and at Deesa and Aden, March. The months of minimum prevalence are—Bombay and Aden, October; Poona and Belgaum, November; and Deesa, January. The months of maximum mortality are—at Bombay, December; Poona, May and December; Belgaum and Aden, July; and Deesa, October. The months of minimum mortality are—at Bombay and Poona, November; Belgaum, May and November; Deesa, January; and Aden, August and September.

Viewing the disease in half-yearly periods, it is found to be most prevalent from April to September at Poona, Belgaum, and Deesa; and from October to March at Bombay and Aden. The deaths are most numerous from April to September at Poona and Belgaum, and from October to March at Bombay, Aden, and Deesa. On the whole, the admissions are greatest between April and September, and the deaths in the opposite six months. The proportion of deaths to treated is greatest in the cold months. For each half-yearly period at the several stations it is as follows:—

	Per-centage of Deaths to Treated.	
	Half Year From April to September.	Half Year from October to March.
Bombay	6.5	8.1
Poona	5.6	5.2
Belgaum	3.0	2.7
Deesa	6.7	10.5
Aden	5.9	8.4
Total	5.1	6.4

Hepatic affections form 9.595 per cent. of the aggregate mortality, highest at Belgaum and lowest at Bombay. At Bombay it is 7.9 ; Poona, 9.4 ; Belgaum, 11.9 ; Deesa, 9.8 ; and Aden, 11.7.

ALL OTHER DISEASES.

Table M 1.

	Annual Ratio of Admissions per 1000 of Strength.	Annual Ratio of Deaths per 1000 of Strength.	Proportion of Deaths to Treated.	Proportion of Deaths to the aggregate Mortality.
Bombay.....	1047.381	16.745	One in 62.548	One in 5.745
Per cent....	.....	.....	1.598	17.405
Poona.....	1184.569	5.612	211.077	5.722
Per cent....	.....	.....	0.473	17.474
Belgaum.....	837.156	4.221	198.329	6.791
Per cent....	.....	.....	0.504	14.724
Deesa.....	914.629	6.565	139.317	4.884
Per cent....	.....	.....	0.717	20.472
Aden.....	736.767	9.194	80.135	4.065
Per cent....	.....	.....	1.247	24.594
Total....	4720.522	42.337	One in 111.498	One in 5.347
		Per cent....	0.896	18.697

TABLE M 2.

Stations.		Ratio of Admissions per 1000 of Strength.	Ratio of Deaths per 1000 of Strength.	Excess of Admissions.	Excess of Deaths.
BOMBAY.	April to September ..	549.649	8.859	51.917	0.973
	October to March ..	497.732	7.886		
	Total Annual Ratio..	1047.381	16.745		
POONA.	April to September ..	615.183	3.061	45.797	0.510
	October to March ..	569.386	2.551		
	Total Annual Ratio..	1184.569	5.612		
BELGAUM	April to September ..	420.649	2.186	4.142	0.151
	October to March ..	416.507	2.035		
	Total Annual Ratio..	837.156	4.221		
DEESA.	April to September ..	500.635	3.766	86.641	0.967
	October to March ..	413.994	2.799		
	Total Annual Ratio..	914.629	6.565		
ADEN.	April to September ..	372.644	5.438	7.528	1.682
	October to March ..	364.123	3.756		
	Total Annual Ratio..	736.767	9.194		
Total.	April to September ..	2458.760	23.310	197.018	4.283
	October to March ..	2269.742	19.027		
	Grand Total	4720.522	42.337		

Table N.

The Months of Maximum and Minimum Mortality from Fevers, Cholera, Diseases of the Respiratory Organs, Diseases of the Alimentary Organs, and from All Causes, (excluding Cholera,) among the European Troops stationed at Bombay, and among the mass of the Population, European and Native, compared; showing also the order of Regression from the highest to the lowest period in each.

Among the mass of the Population of Bombay, for three years ending 31st January 1851. Taken from Dr. Leith's Mortuary Reports.		Among the European Troops stationed at Bombay, for 17 years (from 1830 to 1846 inclusive). Taken from Table A.	
Fevers.			
December.	February.	October.	September.
April.	August.	July.	March.
May.	November.	August.	January.
March.	June.	December.	May.
January.	September.	June.	February.
July.	October.	November.	April.
Cholera.			
January.	July.	August.	July.*
December.	November.	June.	February.
September.	May.	April.	December.
April.	March.	May.	October.
August.	June.	September.	November.
October.	February.	March.*	January.
Diseases of the Respiratory Organs.			
January.	March.	December.	April.
September.	December.	July.	June.
October.	July.	August.	March.
November.	May.	October.	November.
August.	February.	May.	September.
April.	June.	February.	January.
Diseases of the Alimentary Organs.			
Diarrhœa and Dysentery of the Table added together.			
January.	May.	December.	October.
August.	March.	January.	April.
December.	September.	March.	August.
July.	November.	February.	June.
April.	June.	July.	September.
February.	October.	November.	May.

* March and July alike.

Among the mass of the Population of Bombay, for three years ending 31st January 1851. Taken from Dr. Leith's Mortuary Reports.		Among the European Troops stationed at Bombay, for 17 years (from 1830 to 1846 inclusive). Taken from Table A.	
Total from All Causes (*excluding Cholera, Small-pox, and Measles*).			
December.	July.	December.	February.
January.	February.	January.	November.
April.	November.	July.	June.
March.	October.	October.	April.
May.	September.	March.	May.
August.	June.	August.	September.

Regression of the Total Mortality among the European Troops at Bombay, from 1830 *to* 1846, *inclusive* (*including Cholera*).

December.	June.	April.	May.
August.	January.	October.	November.
July.	March.	February.	September.

They differ materially: in three instances out of five, the month of maximum mortality in the one is the minimum in the other; the totals approach nearest. I have not the means of excluding small-pox and measles from the total, but the mortality among European troops from these causes is so very trifling, that the omission is of little moment.

HENRY WEBB,
Hospital Steward.

Ahmednuggur, 12*th May* 1852.

NOTE BY THE SECRETARY TO THE MEDICAL BOARD.

1st. With reference to the question suggested relative to the mortality at Aden, at page 69, the following additional information is submitted :—

Mortality at Aden from 1846 *to* 1851.

	Annual Mortality per cent.	
1846	1.6948	Bombay and Madras Troops.
1847	4.2654	
1848	2.2336	
1849	0.9160	
1850	2.1739	
1851	1.2861	

2nd. With reference to the 2nd paragraph of page 72, H. M.'s 78th and 86th regiments, soon after arrival from Europe, were attacked by cholera while quartered at the Presidency, but, apart from other and usually prevailing causes, the principal cause of the increased mortality since 1839 has been the death at the Presidency of "seriously sick" transferred from Scinde and Aden, belonging to various corps, but chiefly to H. M.'s 78th, H. Co.'s Artillery, and 1st and 2nd European regiments.

Aden was captured in 1839, and troops have been quartered in Scinde since the same period.

The mortality since 1846 has been—

Year.	Average Strength.	Total number of Deaths.	Annual Ratio of Deaths per 1000 of Strength.	
1847.. ..	913	60	65.7	
1848-49..	686	38	55.3	
1849-50..	422	48	113.7	Sick and wounded from Mooltan.
1850-51..	676	54	79.8	

It is to be noted that in all years there is much of what may be justly termed "Mortality *in*, but not *of*, Bombay," arising out of the circumstance of the depôts of both Queen's and Company's troops being stationed at the Presidency, to which all invalids are sent, and in which they are always detained for periods varying from two and a half to four months before they are finally embarked for Europe: in each year, too, a considerable number of sick of the H. Co.'s Artillery and European infantry regiments are sent to the Presidency for change of air—thus adding greatly to the mortality of the 2nd Battalion Artillery, which is in fact the depôt for the Hon'ble Company's troops.

JOHN SCOTT,
Secretary Medical Board.

A

CONTRIBUTION TO DIETETICS.

BY A. H. LEITH, M.D.

Presented July 1852.

It is not intended to enter on the subject of Native dietetics generally, but merely to relate an isolated experiment on a limited, but otherwise favourable, field of observation.

In the year 1846 it fell to me to devise a remedy for the excessive unhealthiness that had long existed among the Native prisoners of the House of Correction in this island. This sickliness had in the preceding year been the occasion of a committee of medical officers being assembled to report on the site of the prison, and the accommodation of its inmates. The site had then been declared unexceptionable, and all apparent faults of accommodation, ventilation and drainage had been remedied on the recommendation of the committee. The daily amount of labour exacted seemed light, being eighty minutes on the tread-mill, and six hours forty minutes at other work of an easy kind, and which was frequently sedentary.

At the time when my investigations began, the dietary had not been inspected; it was now examined, and the conclusion was that the evil flowed from it. The diet table was as follows :—

Natives under 6 Months in Prison.	Natives above 6 Months in Prison.
Rice, 1 seer. Dal, ¼ seer. Ghee, 1 ounce. Salt.	Meat, ½ lb., or Flour, 1 seer. Rice, ½ seer, Dal, ¼ „ } or Rice, ¾ seer. Vegetables, ½ lb. Ghee, 1 ounce. Curry-stuff, ½ ounce. Salt.

The quality of the various articles was found to be good.

At this time, besides the ordinary cases of sickness, there were fourteen patients with scurvy in hospital. Of these fourteen, seven had been first sensible of the disease when in prison between four and six months; five had been so when from six to ten months, and two when from fifteen to eighteen months in confinement.

From so large a proportion being affected with scurvy in the early months of imprisonment, it was concluded that the food allowed during the first half-year was insufficient to preserve health for so long a period; and it being thought that it was deficient in quantity, for it amounted to only 189 ounces a week, it was determined to increase it, at the end of the first two months. Also, from finding that scurvy manifested itself in those who had been for some time on what appeared the sufficiently liberal allowance granted after six months' imprisonment, it was concluded that there was wanting in the food some ingredient essential to the maintenance of health for a prolonged period. Being aware that there was not a Native of this part of India who does not habitually use *kokum*, *tamarind*, *ambsool* or *amboshee* (unripe mango sliced and dried), *limes*, or *pickles*, with his food of grain,* I entertained the opinion that an acid condiment was the deficient ingredient in the diet, and determined to supply it to all in the prison. It was a matter of convenience to give the same article to all alike, and to facilitate a decision as to which it should be, inquiry was made, and it was found that of the substances above named, *kokum* was the best, being generally liked by the Natives, and being objected to by no caste, while at the same time it was easily procurable, and cheap. It is the dried fleshy part of the fruit of the *garcinia purpurea*, a tree which is cultivated in the Konkan. The fresh fruit is variously named in different parts of the country *rat-toot*, *rat-am* and *kokum*; the dried fruit, as sold in the bazar, is called *kokum*, *kokum ka cheelta*, or, by Marathas, *kokumsal*. So common is it that in Bombay it has supplanted the dried chip of

* The dried unripe apricot, imported from Khorasan, is common in the bazars of Kuchee and Upper Sindh.

the unripe mango, and has appropriated its names, for if a Guzerathee asks for *amsool*, or a Konkanee for *amboshee*, he is, as a matter of course, supplied by the shopkeeper with *kokum*. At first the daily allowance of this condiment was ¾ oz., but after some time it was reduced to ½ oz., on its being found that such was the average quantity actually consumed. As an acid condiment could not be used with merely rice, dal and ghee, without spices, a daily allowance of ½ oz. of curry-stuff was given to every prisoner, instead of, as before, restricting it to those who had been six months in confinement.

As persons belonging to inland parts of the country on admission into prison were generally found to be unaccustomed to eat rice, the option was given to them during the first two months, to take wheaten flour in lieu of half their allowance of rice, that the possible bad effects of a total and sudden change of diet might be avoided or lessened. It was thought that as the flour was much less bulky than the rice when cooked, those taking the former as part of their allowance were likely not to continue to do so if their appetites were good, but to have recourse to the more filling rice, which at this place must be considered the principal food of the prison.

The only alteration made in the dietary of those above six months in prison, besides the addition of kokum, was leaving it no longer optional with them, as before, whether or not they should take dal : those who took meat were not allowed dal, but got an equivalent of rice ; and those Hindoos and Boodhists, who on religious grounds took no meat, and had wheaten flour in lieu of it, were obliged to take dal with their rice. This rule was made from considering that an azotized vegetable principle such as is abundant in the dal, as in other pulses, was unnecessary when meat was eaten, but was of essential benefit when it was not used. The continuance of the allowance of ghee was thought desirable to supply the necessary fatty principle to the body.

The altered diet table was as follows :—

Under 2 Months.	Under 6 Months.	Above 6 Months.
Rice 1 seer, or { Rice ½ seer. Flour ½ ,,	Rice..... ..... 1 seer.	Meat ½ lb. Rice ¾ seer } or { Flour 1 seer Rice ½ ,, Dal ¼ ,,
Dal..... ..... ¼ ,,	Dal..... ¼ ,,	Ghee..... 1 oz.
Ghee..... .... 1 oz.	Ghee..... 1 oz.	Vegetables..... ½ lb.
Salt .... ⅓ ,,	Vegetables (green when procurable)..... ½ lb.	Salt..... .... ⅓ oz.
Kokum..... .. ½ ,,	Salt..... .... ⅓ oz.	Kokum.... ..... ½ ,,
Curry-stuff (Onion, Red Pepper, Turmeric, Coriander) ½ ,,	Kokum..... ½ ,,	Curry-stuff..... ½ ,,
Equal to 189 oz. a week, exclusive of condiments.	Curry-stuff..... ½ ,,	With Meat 225¾ oz. a week.
	245 oz. a week, exclusive of condiments.	With Flour 266½ oz. a week.
		Exclusive of condiments.

N. B.—1 seer of Rice, which is given by measure, weighs about .... 21 oz.
1 ,, Flour (wheaten)..... 16 ,,
1 ,, Dal (Toor)..... 20 ,,
The *Toor Dal* is the pea of the *cajanus indicus ; Ghee* is boiled butter.

This new dietary was introduced in July 1846, and from that time was kept a register, in which was entered the weight of each prisoner, at admission, after two months, and six months, at which periods changes in their rations took place, and also at the end of each year of incarceration.

In the beginning of 1851, owing to a change in the committee of superintendence of the prison, the new dietary, which had been in force four years and a half, was contrasted with that of the zillah jails, and was said to be extravagant and luxurious. The question was submitted to Government, and by it was referred to a medical committee for investigation. An extract from that committee's report, with the tables that were appended to it, is now given, to show the result of the experiment.

Extract from Report of Committee :—"From the time that this change in the dietary was introduced, a register of the weights of the prisoners has been kept, and an abstract of it (A) which is appended, shows that 70 per cent. of those admitted increased in weight on the low allowance of 189 oz. of food weekly. This arises, apparently, from a large number of those sent to prison being broken in health, through leading dissolute

lives, or being from other causes in a state approaching to starvation,—to relieve which they had committed theft. Although a large number of the prisoners on the diet of the first two months increased in weight, it has been found that persons, who, for petty offences, have been committed to prison for short terms several times in quick succession, so as to be nearly continuously on that amount of food for many months, have fallen into an anæmic state. The abstract shows that at the more advanced periods of incarceration the proportion of those who gained weight decreased, from which it is inferred, that although the quantity of food has been progressively increased, it has not been so unduly.

"As a similar dietary was introduced into the County Jail at the same time, an abstract of the register kept there of the weights of the criminal prisoners (to whom alone it applied) is also appended (B). Differences, however, in the results of the dietary, both in the weights and the health of the inmates of the two institutions, are to be expected, from the facilities which the prisoners in the County Jail have of bartering their food for tobacco, opium, and ganja with the debtors, with whom under present circumstances they cannot be prevented from communicating.*

"The hospital records show a decided amelioration in the health of the prison since 1846, when the diet was last changed: a table (C) illustrative of this is appended, showing the diseases, admissions and deaths, during the ten years preceding the change, and during the four years that have since elapsed, omitting the half-year immediately succeeding the alteration, as it may be considered a period of transition.

"In the last four years no admission for scurvy has occurred; and the only one for beri-beri appears to have been imported.

* Another, and apparently the chief cause why so many lost weight, was, that the work on the tread-mill, at this prison, was much severer than at the House of Correction. On its effects on the prisoners being seen, the Marshall altered the half-hour periods on the mill to twice the number of a quarter hour each, with the desired good effect of increasing the proportion of those who gained weight: this change he made in the latter half of 1848.

"Another table (D) is appended, showing in juxtaposition the admissions and deaths in the House of Correction and County Jail, where the term of incarceration never exceeds three years; and in the other jails under the Presidency of Bombay among prisoners whose time of confinement has not exceeded three years. In the former two prisons, the admissions into hospital do not increase with length of confinement, while in the other jails generally, the prisoners become more unhealthy, and their mortality increases. The number of deaths that have occurred in the two prisons of the island of Bombay, during the last four years, is too small to admit a ratio of any accuracy being therefrom deduced.

"The facts that have come before the committee relative to the health of the Native prisoners in the House of Correction, especially when compared with what it was before the year 1846, make them averse to recommend any great change in the diet; but they suggest that the present daily ration of meat be reduced to 6 oz., while to those who take meat, the allowance of rice be, at the same time, increased to one seer. Regarding the necessity for the present allowance of ghee, there is a difference of opinion among the members of the committee; but as, under the present dietary, the health of the prisoners has been so well maintained, they are unwilling to recommend its reduction."

A.

HOUSE OF CORRECTION.

Gain and Loss of Weight of Native Prisoners, from July 1846 to the end of 1850.

Period of Incarceration completed.	Castes.	Years.	Gained. No.	Gained. Weight.	Neither lost nor gained.	Lost. No.	Lost. Weight.	
				lb. *oz.*			*lb.* *oz.*	
2 months..	Asarcophagous ..	1846-7....	76	512 8	4	23	108 8	
		1848.....	36	209 0	4	14	76 0	
		1849.....	18	99 0	4	9	27 0	
		1850.....	35	162 0	10	19	87 6	
		Sum....	165	982 8	22	65	298 14	Of 252 there were 65.48 per cent. who gained, and 25.79 who lost.
	Sarcophagous....	1846-7....	203	1525 8	16	51	216 8	
		1848.....	163	978 8	20	46	259 8	
		1849.....	218	1210 0	25	65	293 0	
		1850.....	194	970 0	29	57	333 0	
		Sum	778	3684 0	90	219	1102 0	Of 1087 there were 71.57 per cent. who gained, and 20.15 who lost.
		Total....	943	4666 8	112	284	1400 14	Of 1339 there were 70.43 per cent. who gained, and 21.21 who lost.
			In 943, mean gain 4 lb. 15 oz. In 284, mean loss 4 lb. 15 oz.					
6 months..	Asarcophagous ..	1846-7....	16	107 0	4	4	27 0	
		1848.....	15	74 0	2	7	51 0	
		1849.....	9	57 0	2	2	11 0	
		1850.....	3	16 0	..	6	41 0	
		Sum....	43	254 0	8	19	130 0	Of 70 there were 61.43 per cent. who gained, and 27.14 who lost.
	Sarcophagous....	1846-7....	43	285 0	5	12	27 0	
		1848.....	22	177 0	..	17	87 0	
		1849.....	37	218 0	3	15	123 0	
		1850.....	42	332 0	3	17	92 0	
		Sum	144	1012 0	11	61	329 0	Of 216 there were 66.66 per cent. who gained, and 28.24 who lost.
		Total....	187	1266 0	19	80	459 0	Of 286 there were 65.38 per cent. who gained, and 27.97 who lost.
			In 187, mean gain 6 lbs. 12 oz. In 80, mean loss 5 lbs. 12 oz.					

1 year	Asarcophagous ..	1848.....	6	22	0	..	4	35	8	
		1849.....	10	46	0	4	9	80	0	
		1850.....	3	25	0	..	3	36	8	
		Sum....	23	118	0	4	19	164	8	Of 46 there were 50.00 per cent. who gained, and 41.30 who lost.
	Sarcophagous	1846-7....	9	69	0	4	10	97	8	
		1848.....	18	115	0	4	14	99	8	
		1849.....	97	32	0	3	7	47	0	
		1850.....	24	190	0	2	20	162	0	
		Sum	148	406	0	13	51	406	0	Of 212 there were 69.81 per cent. who gained, and 24.06 who lost.
		Total....	171	524	0	17	70	570	8	Of 256 there were 66.28 per cent. who gained, and 27.13 who lost.
		In 171, mean gain 3 lbs. 1 oz. In 70, mean loss 8 lbs. 2 oz.								
2 years ..	Asarcophagous ..	1846-7....	..	....		..	..	....		
		1848.....	..	....		..	1	1	0	
		1849.....	11	97	8	..	2	5	0	
		1850.....	6	29	0	2	2	20	0	
		Sum....	17	126	8	2	5	26	0	Of 24 there were 70.83 per cent. who gained, and 20.83 who lost.
	Sarcophagous	1846-7....	..	....		..	..	....		
		1848.....	..	....		..	..	....		
		1849.....	..	....		..	..	....		
		1850.....	1	1	0	..	..	....		
		Sum	1	1	0	..	..	....		
		Total....	18	127	8	2	5	26	0	Of 25 there were 72.00 per cent. who gained, and 20.00 who lost.
		In 18, mean gain 7 lbs. 1 oz. In 5, mean loss 5 lbs. 3 oz.								

B.

COUNTY JAIL.

Gain and Loss of Weight of Native Criminal Prisoners, from July 1846 to the end of 1850.

Period of Incarceration completed.	Castes.	Years.	Gained. No.	Gained. Weight.	Neither lost nor gained.	Lost. No.	Lost. Weight.	
				lb. oz.			*lb. oz.*	
2 months..	Asarcophagous ..	1846-7....	4	24 8	2	16	69 12	
		1848.....	15	51 8	3	8	28 8	
		1849.....	21	100 0	10	6	31 0	
		1850.....	31	168 0	5	11	44 0	
		Sum....	71	344 0	20	41	173 4	Of 132 there were 53.78 per cent. who gained, and 31.06 who lost.
	Sarcophagous....	1846-7....	76	281 12	14	34	165 8	
		1848.....	40	200 12	5	21	57 8	
		1849.....	100	578 0	54	28	98 0	
		1850.....	86	492 0	21	37	111 0	
		Sum	302	1552 4	74	120	432 0	Of 496 there were 60.89 per cent. who gained, and 24.19 who lost.
		Total....	373	1896 4	94	161	605 4	Of 628 there were 59.30 per cent. who gained, and 25.64 who lost.
			In 373, mean gain 5 lb. 13 oz. In 161, mean loss 3 lb. 12 oz.					
6 months..	Asarcophagous ..	1846-7....	3	10 0	..	10	57 12	
		1848.....	1	8 0	..	1	9 0	
		1849.....	3	22 0	1	1	9 0	
		1850.....	13	99 0	2	8	65 8	
		Sum....	20	139 0	3	20	135 4	Of 43 there were 46.51 per cent. who gained, and 46.51 who lost.
	Sarcophagous....	1846-7....	14	74 8	1	20	154 4	
		1848.....	1	0 4	..	..	..	
		1849.....	21	167 0	3	4	18 0	
		1850.....	19	116 0	3	6	31 0	
		Sum	55	357 12	7	30	203 4	Of 92 there were 59.78 per cent. who gained, and 32.61 who lost.
		Total....	75	496 12	10	50	338 8	Of 135 there were 55.55 per cent. who gained, and 37.04 who lost.
			In 75, mean gain 6 lbs. 9 oz. In 50 mean loss 6 lbs. 12 oz.					

1 year	Asarcophagous	1849	..	....	..	..	....	
		1850	..	....	..	..	....	
		Sum	5	25 8	..	7	46 12	Of 12 there were 41.12 per cent. who gained, and 58.33 who lost.
	Sarcophagous	1846-7	4	20 0	1	15	80 12	
		1848	1	1 0	..	..	....	
		1849	10	108 0	..	5	21 8	
		1850	1	16 0	..	4	15 0	
		Sum	16	145 0	1	24	117 4	Of 41 there were 39.02 per cent. who gained, and 58.53 who lost.
		Total	21	170 8	1	31	164 0	Of 53 there were 39.62 per cent. who gained, and 58.49 who lost.
			In 21, mean gain 8 lbs. 2 oz. In 31, mean loss 5 lbs. 5 oz.					
2 years	Asarcophagous	1846-7	..	....	..	..	....	
		1848	..	....	2	5	28 4	
		1849	..	....	..	..	....	
		1850	..	....	..	..	....	
		Sum	..	....	2	5	28 4	
	Sarcophagous	1846-7	..	....	..	..	....	
		1848	2	15 12	..	5	43 0	
		1849	..	....	..	..	....	
		1850	2	12 0	1	1	3 0	
		Sum	4	27 12	1	6	46 0	
		Total	4	27 12	3	11	74 4	Of 18 there were 22.22 per cent. who gained, and 61.11 who lost.
			In 4, mean gain 6 lbs. 15 oz. In 11, mean loss 6 lbs. 12 oz.					

C.

Admissions of Native Prisoners into the Hospital of the House

YEARS.	Cholera.	Chicken-Pox and Small-Pox.	Fever.	Apoplexy and Paralysis.	Delirium Tremens.	Epilepsy.	Disease of Brain—Cephalic Affection.	Disease of Heart.	Asthma.	Bronchitis and Catarrh.	Phthisis Pulmonalis.	Pneumonia.	Abdominal Inflammation.	Bilious Cholera and Colic.	Cynanche Parotidea.	Cynanche Tonsillaris.	Diarrhœa.	Dysentery.	Dyspepsia.	Hæmorrhoids and Fistula in Ano.	Hepatitis and Icterus.	Hernia.	Intestinal Worms.
1836-7	..	1	30	1	..	..	1	..	2	..	1	..	1	..	.	..	8	5	..	..	..	..	..
1837-8	11	..	19	..	..	..	1	..	3	..	1	..	1	..	..	..	5	7	..	..	2	..	..
1838-9	..	1	36	..	..	..	1	..	5	2	1	..	..	1	..	..	8	15	..	..	..	..	..
1839-40	8	1	45	1	..	..	..	..	4	..	1	..	..	11	..	..	14	12	..	..	..	..	..
1840-1	1	..	73	..	1	..	4	..	7	..	1	..	..	3	..	1	18	11	..	..	..	..	..
1841-2	22	..	56	..	..	..	..	2	1	1	..	..	..	4	..	..	11	24	..	..	..	2	1
1842-3	29	..	67	1	1	1	1	1	..	..	..	..	..	1	..	..	6	24	..	3	..	..	..
1843-4	4	..	82	1	1	..	2	..	5	..	..	..	.	..	..	..	15	44	..	..	..	..	..
1844-5	19	..	82	1	1	1	..	..	7	..	..	..	..	2	..	..	25	25	..	1	..	1	..
1845-6	1	..	76	..	..	1	2	..	8	..	3	..	..	..	..	..	18	43	..	2	2	6	..
1847	..	..	33	1	..	..	..	..	..	2	2	..	..	..	6	1	..	3	1	1	2	..	..
1848	..	..	28	..	..	..	3	1	..	2	..	..	..	..	..	..	2	7	..	1	8	..	1
1849	1	..	18	..	..	..	2	..	..	1	..	1	..	..	1	..	1	10	1	1	2	..	1
1850	1	1	27	..	..	3	1	..	..	8	..	..	..	2	1	1	10	12	1	1	4	..	..

Correction, with per-centage of Admissions and Deaths.

Urinary Affection.	Syphilis & Affection of Generative Organs.	Ophthalmic Disease.	Phlegmon, Arthritis, Tumor, Simple Bubo.	Ulcer.	Dracunculus.	Cutaneous Disease.	Rheumatism.	Dropsy.	Beri-beri.	Scurvy.	Cachexy and Debility.	Wounds, Injuries, Poisoning.	Anomalous.	Admissions. Total.	Admissions. Exclusive of Cholera.	Deaths. Total.	Deaths. Exclusive of Cholera.	Strength.	Per-centage. Admissions, exclusive of Cholera.	Per-centage. Deaths, exclusive of Cholera.
1	14	5	..	2	8	2	2	..	..	13	..	2	..	99	99	4	4	77	128.57	5.20
4	15	4	1	1	7	1	9	..	..	6	..	1	..	100	89	10	8	86	103.49	9.30
.	28	3	1	5	8	3	10	3	..	24	2	7	..	165	165	8	8	142	116.19	5.63
1	29	5	5	1	12	5	17	9	3	22	..	5	..	213	205	10	6	128	160.16	4.69
.	12	5	..	..	10	5	19	2	3	19	2	3	..	200	199	6	6	82	242.68	7.32
1	14	4	8	5	10	..	16	3	..	11	..	2	1	199	177	19	9	81	218.52	11.11
.	16	1	11	8	31	7	31	4	..	11	..	4	..	259	230	18	5	103	227.72	4.85
.	17	..	4	8	22	3	38	3	..	35	..	3	..	287	283	5	4	115	246.49	3.48
.	10	7	7	20	34	1	32	1	..	9	..	3	..	289	270	16	7	152	177.63	4.51
.	19	5	18	5	22	10	10	1	1	55	..	3	..	312	311	19	18	212	146.69	8.49
.	25	..	7	..	18	11	4	..	..	..	..	7	..	124	124	2	2	144	86.11	1.39
.	12	1	10	2	45	1	2	1	..	..	..	21	..	148	148	3	3	172	86.05	1.74
.	10	4	5	1	21	2	3	1	..	..	..	10	.	99	98	1	1	153	64.05	0.65
.	14	2	12	2	14	..	7	1	1	..	..	8	..	135	134	1	1	147	91.16	0.68

hs { Remittent Fever.. 1 7. { Chronic Hepatitis. 1 — 2	1848. { Acute Hepatitis.. 1 Chronic Hepatitis. 1 Remittent Fever.. 1 — 3	1849. Pneumonia... 1	1850. Anasarca.. 1

D.

Admissions and Deaths among Prisoners, classed according to length of actual Incarceration.

Periods of Confinement.	AHMEDABAD. 1st April 1848 to 31st March 1850.			KAIRA. 1st April 1848 to 31st March 1850.			RAJKOTE. 1st April 1848 to 31st March 1850.			SURAT. 1st January 1848 to 31st March 1850.			BROACH. 1st January 1848 to 31st March 1850.			NORTHERN DIVISION.				
	Str.	Adm.	Deaths	Str.	Adm.	Deaths	Str.	Adm.	Deaths	Str.	Adm.	Deaths	Str.	Adm.	Deaths	Str.	Adm.	Deaths	Yearly percentage to Strength. Admissions	Yearly percentage to Strength. Deaths
0 to 3 months	290	528	18	99	79	1	17	25	1	136	226	9	61	310	5	603	1208	34	200.33	5.64
3 to 6 months	110	327	17	83	103	4	13	17	..	74	136	7	77	141	8	357	724	36	202.80	10.08
6 months to 1 year ..	214	432	21	59	56	3	26	29	..	95	186	25	91	141	3	485	844	52	174.02	10.72
1 to 3 years.	333	639	33	14	13	..	15	20	..	141	240	35	69	118	10	572	1030	78	180.07	13.65
Total under 3 years..	947	1926	89	225	251	8	71	91	1	446	828	76	298	710	26	2017	3806	200	188.69	9.91
Total above 3 years..	466	743	34	39	14	..	3	3	..	71	114	7	62	35	6	641	909	47		

	TANNA. 1st January 1848 to 31st March 1850.			BANDOOP. 1st January 1848 to 31st March 1850.			ALIBAGH. 1st January 1848 to 31st March 1850.			PRESIDENCY DIVISION.				
	Str.	Adm.	Deaths	Str.	Adm.	Deaths	Str.	Adm.	Deaths	Str.	Adm.	Deaths	Yearly percentage to Strength. Admissions	Yearly percentage to Strength. Deaths
0 to 3 months.	254	147	10	10	26	1	28	48	1	292	221	12	75.68	4.11
3 to 6 months.	255	115	23	19	58	2	18	28	..	292	201	25	68.83	8.56
6 months to 1 year ..	202	200	23	29	129	2	25	27	1	256	356	26	139.06	10.15
1 to 3 years	619	777	93	85	291	8	80	85	1	784	1153	102	147.07	13.01
Total under 3 years..	1330	1239	149	143	504	13	151	188	3	1624	1931	165	118.90	10.16
Total above 3 years..	1061	974	162	52	114	3	42	49	..	1155	1137	165		

	RUTNAGHEREE. 1st January 1848 to 31st March 1850.			DHARWAR. 1st January 1847 to 31st March 1850.			SHOLAPOOR. 1st January 1847 to 31st March 1850.			SOUTHERN DIVISION.				
	Str.	Adm.	Deaths	Str.	Adm.	Deaths	Str.	Adm.	Deaths	Str.	Adm.	Deaths	Yearly percentage to Strength. Admissions	Yearly percentage to Strength. Deaths
0 to 3 months	118	171	1	637	619	8	190	139	3	945	929	12	98.31	1.27
3 to 6 months	85	91	2	320	289	9	117	132	2	522	512	13	98.09	2.49
6 months to 1 year ..	91	130	4	298	175	9	98	156	4	487	461	17	94.66	3.49
1 to 3 years	150	206	5	433	351	9	98	238	11	681	795	25	116.74	3.67
Total under 3 years..	444	598	12	1688	1434	35	503	665	20	2635	2697	67	102.35	2.54
Total above 3 years..	196	146	..	383	265	5	194	281	26	773	692	31		

	[illegible]			[illegible]			DHOOLIA.			NASIK.								
	1st January 1847 to 31st March 1850.			1st January 1847 to 31st March 1850.			1st January 1847 to 31st March 1850.			1st January 1847 to 31st March 1850.				POONA DIVISION.				
0 to 3 months	267	68	1	459	291	5	350	60	3	192	196	1		1268	615	10	48.50	0.79
3 to 6 months	122	80	1	233	219	7	242	58	..	30	57	1		627	414	9	66.03	1.43
6 months to 1 year...	219	174	6	261	277	13	236	117	4	92	237	1		808	805	24	99.63	2.97
1 to 3 years	587	456	27	510	487	26	169	211	11	18	53	..		1284	1207	64	94.01	4.98
Total under 3 years..	1195	778	35	1463	1274	51	997	446	18	332	543	3		3987	3041	107	76.27	2.68
Total above 3 years..	1155	540	38	1120	291	15	370	161	14	510	23	..		3155	1015	67		

N.B.—The above numerical Strengths and numbers of Admissions and Deaths are taken from the Returns of Superintending Surgeons of Divisions.

	House of Correction. 1st January 1847 to 31st December 1850.				County Jail. Criminal Prisoners. 1st January 1848 to 31st December 1850.				House of Correction and County Jail. 1st January 1847 and 1848 to 31st December 1850.						Other Jails of all Divisions.				
	Str.	Adm.	Deaths	Percentage of Admissions.	Str.	Adm.	Deaths	Percentage of Admissions.	Str.	Adm.	Deaths	To Strength Per-centage. Adm.	To Strength Per-centage. Deaths		Str.	Adm.	Deaths	To Strength percentage yearly. Adm.	To Strength percentage yearly. Deaths
0 to 3 months .	422	355	3	84.12	325	248	3	76.31	747	603	6	80.72			3108	2973	68	95.65	2.11
3 to 6 months .	114	63	1	55.26	47	45	..	95.74	161	108	1	67.08			1798	1851	83	102.95	4.62
6 m. to 1 year.	93	49	1	52.69	35	24	1	68.57	128	73	2	57.03			2036	2466	119	121.12	5.84
1 to 3 years...	72	40	2	55.55	38	20	..	52.63	110	60	2	54.54			3321	4185	269	126.02	8.10
	701	507	7	72.33	445	337	4	75.51	1146	844	11	73.65	0.96	Total under 3 years...	10263	11475	539	111.81	5.25
														Total above 3 years...	5724	3753	310		

N.B.—In these Tables, according to length of confinement in House of Correction and County Jail, Europeans are included, but they are few in number.

Of the above there were reported from Cholera, without distinction of periods of incarceration—

	Admissions.	Deaths.		Admissions.	Deaths.		
At Surat.....	6	4	In Northern Division....	23	9	Adm.	Deaths.
,, Broach.....	17	5				66	28
,, Tanna.	31	11	,, Presidency Division..	31	11		
,, Poona.	5	5	,, Poona Division.....	12	8		
,, Ahmednuggur.	2	1					
,, Nasik.	5	2					
House of Correction.....				2			

MEDICAL HISTORY

OF THE

CENTRAL SCHOOLS OF BOMBAY, FOR THE FIVE YEARS ENDING THE 1ST JULY 1852; INCLUDING A VISITATION OF MEASLES.

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Presented August 1852.

BEFORE entering upon the subject of this short paper, it will be as well to read to the Society the following extract from the "Rules and Regulations" of the "Bombay Education Society," under whom the schools are governed :—

"RULE 46.

"In the selection of children to become objects of the charity, preference shall be given—

"1st, To the children of Europeans, who have been killed in the service of their country.

"2nd, To the children of Europeans who have otherwise died in the service.

"3rd, To the children of those who, from age and infirmity, have retired from the public service.

"4th, To the children of other indigent persons, preference being given to such as are legitimate, and to those who are wholly, or in part, orphans."

These are now admitted, under certain restrictions, from the earliest age of infancy, and, ordinarily, are discharged from the schools at the age of sixteen.

Hence it will appear that there are children of all ages in the schools; and, besides pure Europeans, children of all kinds of mixtures of European and Native blood, the latter including Negro as well as Indian.

They are divided into two departments, viz. the boys' and girls' schools, each of which has its respective building, which are separate from each other, and situated in the centre of the island, in a part which is scantily surrounded by both trees and houses, and therefore freely open to the land and sea-breezes. In the girls' school is a third division, called the "Infant School," in which the children remain until they are six years of age, when they are transferred to their proper establishments. There is an upper as well as a lower story in each building, and in the former the children sleep.

In the same enclosure with the buildings is a hospital, also with an upper and lower story. It is divided into two parts, viz. one for the boys, the other for the girls. The establishment consists of two nurses, two ward-boys, two peons, one sweeper, and a surgeon and an apothecary: the two latter live out of the enclosure. The food is supplied from the schools, and prepared by the cooks of the schools respectively; and the diet of the hospital is that of the schools, modified according as it may be necessary.

Previous to the opening of the hospital in the month of June 1847, a ward on the ground-floor in each school was used for this purpose.

Such is a short, but sufficiently detailed account of the schools for our present object.

When I received medical charge of them in 1847, they had just been visited by an epidemic of measles, which has occasionally been the case for the last thirty years; viz. in October 1832, December 1838,* December 1846,† and now again in March 1852. The occurrence, therefore, from time to time, of a disease like measles, affords convenient intervals for the division of the medical history of the schools into distinct periods; and having had

* "Report on the Measles which prevailed epidemically in the Central Schools of Bombay, during the months of December 1838, and January, February and March 1839. By C. Morehead, M.D."—*Medical and Physical Transactions*, vol. ii. p. 181.

† "On the Epidemic of Measles which appeared in the Central Schools, Byculla, during the winter months of 1846-47. By W. C. Coles, M.D."—*Ibid*, No. ix. Appendix, p. 225.

charge of them throughout the last of these, I shall make it the subject of this paper, viz. that commencing from July 1st 1847 and terminating 1st July 1852.

It so happens, too, that the hospital has been opened for about the same period, which will give us an opportunity of comparing the amount of mortality in the schools for the five years before and the five years since it has been established.

The average half-yearly strength of the schools for the last five years has been 330.3.

In looking over a tabular view of the monthly admissions for this period, it would appear, that in a measure as we depart from the end of the year the climate of Bombay, as regards the schools, becomes more and more unhealthy, until we begin to approach it again: that is, that the first half of January and the last half of December are the most healthy parts of the whole twelve months; the last part of January and the first of December comparatively healthy; and the last half of November and the first of February less so. The period from May to October inclusive appears to be the worst part of the whole year. May, June, July, and August are particularly favourable for cutaneous diseases, especially eczema and boils; and the autumnal months for fever.

In the month of July 1847, viz. the third month after the cessation of the last visitation of measles, ophthalmia and cutaneous affections (porrigo of the scalp and eczema) were very prevalent, together with slight intermittent fevers. Of ophthalmia there were 107 cases—83 boys and 24 girls; of cutaneous affections 46 cases—43 boys and 3 girls; and of intermittent fevers 65 cases—41 boys and 24 girls. These affections, which were principally the *sequelæ* of 144 cases of measles that occurred in the spring months, went down rapidly towards the end of July.

At this time there were 30 boys with "scald-head" (porrigo favosa), while in the girls' school there was not a single case. This disease, which had existed in the schools previous to the last visitation of the measles, and had proved very unmanageable, yielded to the advantages afforded by the hospital, and for two years past there has been very little of it. At present there is not

a single case in hospital, nor, as far as can be seen, a single case throughout the schools. It has been of comparatively very rare occurrence among the girls; and this, connected with the disappearance of it among the boys, seems to point out that its presence depended alone upon its infectiousness.

Here it is desirable to mention that the cutaneous affections which chiefly prevail in the schools are eczema, porrigo, scabies, and boils. The eczema frequently becomes impetiginous, and is also frequently mixed up with vesicular and purulent scabies, especially about the hands and feet. The porrigo, which formerly prevailed over the head, seems now to occur in scattered pustules about the body, grouped or singly; which frequently become ecthymatous, and occasionally end in mild ulcers. They are more or less flat and circular, and frequently umbilicated; of a white or yellow colour, according to the serous or puriform nature of their contents, scabbing in thin flakes, or in thickish crusts. They are generally accompanied by redness, and sometimes hardness, round the edges, according to the amount of imflammation attending them. From being a simple porriginous pustule they may become ecthymatous, and, extending horizontally, unite with others which are near, and at length pass into an ulcer. Frequently they leave a mark so dark that it would indicate a syphilitic, mercurial, or cachectic taint in England, but in this country the intensity of this colour, and its durability, seem to depend on the amount of inflammation which accompanied the pustule in the first instance, combined with the influence of the climate. These pustules may occur singly or in little groups over any part of the body, but prevail chiefly on the hands, feet, elbows, knees, nates, legs and arms, and most of all on those parts in the order in which I have named them. They are very seldom severe, but are frequently troublesome to eradicate, from their prevalence, and their unyielding nature to treatment. When on the hands, mixed up with scabies, it is frequently difficult and almost impossible to distinguish them from the purulent form of the latter: sometimes a few vesicles of eczema seem to pass into a porriginous pustule, thence become ecthymatous, and end in an ulcer; hence it becomes very perplexing to determine under what

form of eruption the patient shall be entered; but by far the most frequent one is that which I have described, yet even this has several phases. Whatever name we may choose to give it, there is no doubt of its being the characteristic cutaneous affection of the schools, and from being so nearly linked to porrigo favosa, we have strong grounds for considering it infectious, which holds out the hope that sooner or later it may be eradicated from the schools after the manner of the scald-head; but of course this will not be so easily accomplished, on account of the severity and conspicuousness of the latter pointing out its presence, while a single pustule of the former may, and does constantly, remain concealed under the clothes for months before it is detected. Hence, then, the little chance of getting rid of this affection, without the most diligent attention on the part of the medical attendant, as well as on that of the master and mistress of the schools. I have been thus particular in describing this affection, because it is at once the most troublesome and prevalent in these schools, and, therefore, the one to which I shall chiefly allude under the term of cutaneous diseases.

Year 1848.—The most remarkable feature of this year was the decrease of eczematous and porriginous eruptions, together with scabies; but, on the other hand, boils appeared to have taken their place, for the number of admissions for the latter amounted to within seven cases of the sum of those for the two former affections. It is not an uncommon thing for the drying up of a patch of eczema to be followed by one or more boils in the same place. In addition to the prevalence of boils, also, the admissions for fever were so numerous that they exceeded those of any other disease during this year. Pustular inflammation of the conjunctiva frequently alternated with the drying up of porriginous affections of the scalp, and of course yielded to the same treatment. There was no epidemic of any kind during this year.

Year 1849.—The comparative suppression of cutaneous diseases, with the exception of boils, continued throughout 1849, and the boys were the greatest sufferers. Diarrhœa and dysentery prevailed a little, but were attended only with one death, which was from the latter. This may be considered a remarkably

healthy year, for out of a monthly average of 334 children, there were only four deaths, that is a mortality of 1.19 per cent. Hooping-cough prevailed a little in the months of July and August, when there were eleven cases in the girls' school, but none among the boys. And in the boys' school during the months of March, April, and May, a varioloid form of varicella so prevailed as to extend to twenty-four cases, while only one case occurred among the girls.

Year 1850.—The report of this year differs very little from that of 1849, with the exception that the cutaneous diseases had increased, while there was much less diarrhœa and dysentery. During this year, the prevalence of boils, too, in the summer months, was extreme. There were no less than 58 cases in the month of June, viz. 50 girls and 8 boys; and if the irritation which they occasioned did not exert a permanent and baneful influence over the constitution, they at least scarred the faces and necks of many a fair child who hitherto had been unblemished. Their great prevalence in one school and among the smaller children, who would, as a matter of course, from their age, be more or less together, almost led me to think that they were at one time infectious.

Year 1851.—Free from epidemics as the schools were for the three years and a half preceding 1851, the same was not the case this year. The cutaneous diseases still continued progressive, but their increase was not chiefly among the boys, as formerly, but now among the girls. With but one exception, (viz. during the month of February 1850,) the number of admissions for cutaneous affections (not including boils) had up to the month of August 1851 invariably been greatest among the boys, that is from the time I took charge of the schools—what it had been before I know not; it now became greatest among the girls. Purulent scabies, with eczema, appeared in the month of July among the nursery children, or in the infant school, and, rapidly spreading amongst them, extended to the girls, through whose school it also spread to such an extent that few escaped from it; while there was not a case in the boys' school. Hence

the preponderance from that time up to the present of cutaneous affections among the girls.

While purulent scabies was confined to, and spreading, through the girls' school, cynanche parotidea broke out among the boys, and continued from the beginning of October to the end of November, during which 75 boys were attacked by it, and only two girls: it then disappeared almost as suddenly as it had commenced.

Meanwhile another mild, but extremely infectious disease commenced at the beginning of December among the nursery children, viz. catarrhal ophthalmia, just as the purulent scabies was disappearing, and this, having rapidly spread itself amongst them, also found its way up among the older girls, while not a case of it occurred among the boys.

Year 1852.—With the appearance of the ophthalmia, cynanche parotidea also showed itself among the nursery children, and younger girls, and by the month of January last had reached to 41 cases. It then disappeared gradually, and, an isolated case occurring here and there in both schools, it ceased entirely by the end of March.

The month of March, always a suspicious one in these schools, had hardly numbered thirteen days, when measles broke out. A little girl nine years old, of fair complexion, had been admitted into the schools on the 6th from Kirkee, bringing nothing of her previous history with her; and on the 13th was sent into the hospital with slight fever and redness of skin, so mild that, with the absence of cough and sore eyes, it was doubtful whether she was not suffering from roseola: still, it bore such a resemblance to measles, that it only required what afterwards occurred, viz. the appearance of more marked cases of the latter, to make it one. She soon recovered, and was discharged on the 21st, and four days afterwards, viz. on the 25th March, nine genuine cases, all from the girls' school, were admitted into the hospital, with the premonitory symptoms of measles. It was now evident that the disease was in the schools, and preparations were made for opposing its spreading as much as possible; not that the disease might be entirely checked, but that the virulence of its infection might be lessened, by diminishing

the number attacked at one time. All, therefore, who could be sent out of the hospital, were discharged to their respective schools, and every precaution taken to prevent the well, from mixing with the sick, children.

By the end of March the cases had increased to 15, viz. 13 girls and 2 boys (the two latter belonging to the infant school); no case having yet occurred in the boys' school. During the month of April 77 cases were admitted, viz. 54 more from the girls' school, (among which were 10 male nursery children,) and 23 from the boys' school.

The first case in the boys' school occurred on the 10th April, and that, too, in a little boy who was in hospital, where, of course, he was more likely to come in contact with the girls than if he had been in his own school; and during the month of May 15 more cases were admitted, but no more from the girls' school. The last case from the girls' school was admitted on the 22nd April.

Thus the disease terminated with an isolated case, as it had commenced, and with this difference only, that the last was a little more marked than the first. The following table will give the number, age, caste, date of admission, supervening or consequent affection, and date of discharge or death of all the children, viz. 107, who were attacked during this visitation of measles:—

Cases of Measles which occurred in the Central Schools during the months of March, April, and May, 1852.

GIRLS' SCHOOL.

N. B.—In the column of Caste, "E." stands for European, and "I. B." for Indo-Briton.

Caste.	Age.	Date of Admission.	Date of Discharge or Death.	Supervening or subsequent Affection.	Caste.	Age.	Date of Admission.	Date of Discharge or Death.	Supervening or subsequent Affection.
E.	9	13th March.	20th March.		E.	5	1st April.	22nd April. (Died.)	Dysentery.
,,	10	25th ,,	5th April.						
,,	9	,, ,,	,, ,,		,,	10	,, ,,	23rd April.	
I. B.	8	,, ,,	,, ,,		,,	11	,, ,,	22nd ,,	
E.	10	,, ,,	,, ,,		,,	9	2nd ,,	,, ,,	
,,*	6	,, ,,	22nd ,,	Dysentery.	,,	10	,, ,,	11th ,,	
,,	10	,, ,,	5th ,,		I. B.*	5	,, ,,	18th (Died.)	Pneumonia.
,,*	4	,, ,,	22nd ,,		E.	10	3rd ,,	23rd April.	
,,	9	26th ,,	5th ,,		,,	13	,, ,,	14th ,,	
I. B.	9	,, ,,	,, ,,		,,	11	,, ,,	22nd ,,	
E.	6	,, ,,	,, ,,		,,	8	,, ,,	,, ,,	
,,	9	28th ,,	,, ,,	Dysentery.	I. B.	8	,, ,,	,, ,,	
,,	9	29th ,,	,, ,,		,,	12	,, ,,	,, ,,	
I. B.	9	30th ,,	,, ,,		E.	6	,, ,,	,, ,,	
E.	8	31st ,,	22nd ,,		,,	9	4th ,,	29th ,,	Pneumonia.
,,	7	1st April.	17th ,,		,,	8	,, ,,	,, ,,	

* The asterisk marks the males of the Infant School.

GIRLS' SCHOOL (*continued*).

Caste.	Age.	Date of Admission.	Date of Discharge or Death.	Supervening or subsequent Affection.	Caste.	Age.	Date of Admission.	Date of Discharge or Death.	Supervening or subsequent Affection.
E.	8	4th April.	29th April.		E.	5	5th April.	29th April.	
I. B.	7	3rd ,,	,, ,,		,,	0	,, ,,	,, ,,	Staphyloma.
E.	7	,, ,,	,, ,,		I. B.	8	,, ,,	,, ,,	
,,*	5	,, ,,	,, ,,		E.*	6	,, ,,	22nd ,,	
I. B.	13	,, ,,	,, ,,		,,	14	,, ,,	,, ,,	
,,	9	,, ,,	,, ,,	Pneumonia.	I. B.*	4	8th ,,	16th May. (Died.)	Marasmus and Fever.
E.*	5	,, ,,	,, ,,						
I. B.	7	,, ,,	22nd ,,		E.	10	,, ,,	22nd April.	
,,	11	,, ,,	30th ,,		,,	8	,, ,,	,, ,,	
,,	8	,, ,,	27th ,,		,,	5	,, ,,	,, ,,	
,,	12	,, ,,	,, ,,		,,	10	10th ,,	,, ,,	
E.	6	,, ,,	22nd ,,		,,	12	,, ,,	,, ,,	
,,	10	5th ,,	,, ,,		,,	7	7th ,,	,, ,,	
,,*	3	,, ,,	29th ,,		,,	11	11th ,,	29th ,,	Pneumonia and Dysentery.
,,	7	,, ,,	25th ,,		,,	15	22nd March.	4th May. (Died.)	
I. B.*	5	,, ,,	22nd ,,						
E.*	6	,, ,,	,, ,,		I. B.	10	14th April.	29th April.	
I. B.*	6	,, ,,	29th ,,		E.*	7 M.	11th ,,	22nd ,,	
E.	8	,, ,,	,, ,,	[leg. Œdema of	I. B.	1	,, ,,	,, ,,	
I. B.	8	,, ,,	22nd ,,		,,	9	22nd ,,	29th ,,	

* The asterisk marks the males of the Infant School.

BOYS' SCHOOL.

Caste.	Age.	Date of Admission.	Date of Discharge or Death.	Supervening or subsequent Affection.	Caste.	Age.	Date of Admission.	Date of Discharge or Death.	Supervening or subsequent Affection.
E.	7	10th April.	1st May.		E.	7	29th April.	14th May. (Died.)	Dysentery.
,,	9	12th ,,	27th April.						
I. B.	8	13th ,,	11th May.		I. B.	8	30th ,,	10th May.	
E.	9	,, ,,	30th April.		E.	10	,, ,,	,, ,,	
,,	8	14th ,,	,, ,,		,,	8	1st May.	8th ,,	
,,	7	,, ,,	5th May.		,,	8	3rd ,,	,, ,,	[tis.
,,	16	16th ,,	30th April.		,,	8	,, ,,	,, ,,	Conjunctivi-
,,	10	,, ,,	23rd ,,		,,	9	,, ,,	13th ,,	
I. B.	8	20th ,,	30th ,,		,,	10	,, ,,	16th ,,	
E.	7	,, ,,	,, ,,		I. B.	9	4th ,,	,, ,,	
,,	8	21st ,,	,, ,,		E.	8	6th ,,	12th ,,	
I. B.	9	22nd ,,	,, ,,		,,	10	7th ,,	,, ,,	
,,	0	,, ,,	4th May.		I. B.	13	9th ,,	,, ,,	
,,	7	25th ,,	6th ,,		,,	9	12th ,,	,, ,,	
,,	7	,, ,,	11th ,,		,,	9	16th ,,	27th ,,	
,,	7	24th ,,	.....	Pneumonia.	E.	10	17th ,,	,, ,,	
E.	8	27th ,,	4th May.	[tis.	I. B.	10	20th ,,	,, ,,	
,,	7	,, ,,	12th ,,	Conjunctivi-	,,	13	21st ,,	,, ,,	
,,	7	,, ,,	7th ,,		,,	9	26th ,,	31st ,,	
,,	9	29th ,,	4th ,,						

From this table it will be seen, that with the exception of two cases of measles, viz. the first and last, all of those, viz. 69, which occurred in the girls' school were admitted between the 25th March and 11th April, inclusive, or within 22 days of each other; while in the boys' school, where there were but just half the number of cases, viz. 38, they extended over a period just twice as long, viz. 40 days, exclusive, in like manner, of the first and last cases. Hence it may be inferred that the infection was most virulent during the commencement of the visitation;

and certainly the cases were then most severe, but there was nothing throughout malignant saving one case of dysentery, which I shall presently endeavour to show might have been rendered so by the infection of measles.

In some instances, the attacks of measles were ushered in by hardly any premonitory symptoms : the eruption was sometimes slight, sometimes livid; sometimes it partly disappeared, and then returned again with great force—in one case only there was epistaxis. There was more or less cough and inflamed eyes with all—in one or two gastric irritation, and in most diarrhœa; which latter, perhaps, was the most troublesome accompaniment, as it appeared even more likely to run into dysentery than the cough into pneumonia. Throughout there was a marked drowsiness, and many children seemed to sleep through the attack. Pneumonia and dysentery or diarrhœa, combined or separate, supervened in several cases, and, when either went to any extent, terminated, with but one exception, fatally. The following table will show the caste, age, date of admission, disease, and date of death, of all the cases of measles which terminated fatally, as well as of those from other diseases which were admitted at the time the measles were most severe :—

Mortality which occurred in the Central Schools during the Visitation of Measles in 1852.

No.	Sex.	Caste.	Age.	Date of Admission.	Disease.	Date of Death.
1	F.	E.	15	22nd March.	Pneumonia & Dysentery after Measles.	4th May.
2	,,	,,	5	1st April.	Dysentery after Measles.	22nd April.
3	M.	I. B.	5	2nd ,,	Pneumonia after Measles.	18th ,,
4	,,	,,	3	2nd ,,	Marasmus and Fever.	14th May.
5	,,	E.	6	3rd ,,	Dysentery.	19th April.
6	,,	,,	2	5th ,,	Diarrhœa after Measles.	21st ,,
7	,,	,,	5	8th ,,	Dysentery.	17th ,,
8	,,	I. B.	4	8th ,,	Marasmus and Fever after Measles.	16th May.
9	,,	E.	7	29th ,,	Dysentery after Measles.	14th ,,

From this table it will be seen that seven out of these fatal cases were admitted into the hospital during the first eight days of April, out of which, three were for diseases which not uncommonly supervene upon measles. It seems not unreasonable, then, to infer, that the infection of measles might have had something to do with their fatal termination, by rendering them more severe

than they otherwise would have been had they occurred at any other time.

The following summaries of two of the fatal cases, in one of which there was measles, and in the other not, will serve to convey an idea of the worst forms of disease of this time—the milder cases of measles are too common to merit mention :—

Joseph Wilks, Indo-Briton, aged 5, always of a delicate constitution, was admitted on the 2nd April 1852, with the premonitory symptoms of measles, viz. slight continued fever, slight cough, and inflamed eyes. Bowels open ; tongue clean; pulse 140. On the 4th the eruption appeared, and by the 8th had disquamated, for in this case a furfuraceous elimination of the cuticle took place. By the 10th all signs of the eruption were gone, but the cough continued, and he improved up to the 14th, when fever returned, and 2 grs. of quinine three times a day were added to his cough mixture. His bowels were now regular, his tongue clean, and his pulse 120. By the 15th his cough had increased, and the affection of the lungs having become more serious, a blister was applied to the lower part of the chest. On the 17th he was free from fever, but so weak that all medicine was omitted ; his coughing was less, but dyspnœa had now supervened, and a blueness and coldness of the hands, which, together with a crepitating sound heard over the greater part of the chest, left no doubt that pneumonia was present to a great extent. A second small blister (the former one having healed) was applied to the sternum, and the cough mixture, containing ipecacuanha, &c. repeated. On the 19th the cough was by no means urgent, but the dyspnœa and blueness came on in paroxysms : he could not lie back in bed, and, debility rapidly increasing, he died on the 20th, at 3 P. M.

Post-mortem.—As there were no signs of dysentery or diarrhœa, the chest only was examined. There was general engorgement of the lungs, with pneumonia of the lower lobes, and red hepatization of the edges. The heart was natural.

Observations.—A brother of the deceased, aged 7, who is in the boys' school, was also attacked with measles, upon which supervened a similar pneumonia to that just mentioned, with much fever. This was taking a similar course, but the application of the " wet sheets, &c." produced an intermission in the fever, which was afterwards kept up by the administration of 8 grs. of quinine *per diem*, and from that time he rapidly recovered. Had not the " wet-sheets" and woollen covertures been applied, he most probably would have died, for nothing else seemed to produce perspiration.

This, with the exception of a case of dysentery, (which, coming on immediately after the disappearance of the eruption, terminated fatally,) was the worst case of measles which occurred among the boys.

The following is the worst of the three fatal cases from the other diseases which were admitted during the time the measles were most severe :—

James Chambers, European, aged 5, who had suffered a good deal from cutaneous affections, and latterly twice or thrice from dysentery, and prolapsus ani, was admitted on the 8th April 1851, with fever, like that preceding the eruption of measles, of which there were then 40 cases from the girls' and infant schools in hospital. He was treated with a mild diaphoretic mixture. On the 11th, a tendency to looseness, which he had had for two days, passed into a severe diarrhœa, accompanied by discharges of bloody fluid. His tongue suddenly became dry and brown, and symptoms of typhoid debility showed themselves. His pulse was 128, and his skin dry, but not particularly warm. He complained of no pain except when asked, and then put his hand to his forehead : he was in the opposite state to restlessness, and lay apparently conscious of everything that was going on, but with perfect apathy and unconcern, merely changing his position occasionally. His head was shaved, and a cold lotion applied to it, and 2 grs. of quinine, with a simple astringent mixture, which he had been previously taking, given three times a day ; and wine, broth and sago now and then. On the 12th he had no fever, and was stated to have slept well ; but the debility remained the same, and he had now frequent and genuine dysenteric discharges, with occasionally some fœcal matter of a dark greenish colour, and always attended with prolapsus ani. A grain of calomel and 2 grs. of Dover's powder were given him at night, in addition to the other medicines. On the 13th the same treatment was continued, but with no improvement ; and in addition, a solution of 2 grs. of nitrate of silver to ʒi. of water was poured over the prolapsed intestine twice a day, on account of the ulcerated state of the mucous membrane. On the 14th, towards evening, the sanguineous discharges, which had nearly ceased, became profuse and hœmorrhagic ; the pulse was now 140, and the tongue much drier ; the prolapsus ani a little less, and the aspect of the ulcerations improved ; hence the application of the sol. arg. nit. was continued, but the calomel and Dover's powder were omitted, and the 2 grs. quinine and astringent mixture with a little opium given three times a day as before. On the 15th the hœmorrhagic discharges had ceased, and a little bloody dysenteric matter only, accompanied by fœces, was passed ; the pulse numbered 100, and was much weaker : the same treatment was continued, and a small blister applied to the umbilical region. On the 16th he was stated to have passed for the first time a restless night, to complain of much pain, and to have had incessant calls to stool, without passing anything but a little slime : the tongue was now clean, the skin moist and natural to the touch, and a favourable change in this respect seemed to have taken place ; but the pulse was almost innumerable ; vomiting came on during the day, and he died on the 17th at 7½ A. M.

Observation.—To those who have been accustomed to witness such attacks of dysentery in children, it must be obvious that in this case ulceration in an extreme degree existed probably throughout the whole of the large intestine ; the body, therefore, partly on this account, was not examined.

The other case of dysentery mentioned in the list, *without* measles, was not so malignant, though fatal. That of marasmus, also *without* measles, came on with cough, which lasted for some time, and was so severe as to require a blister, after which

it subsided, but left the child so weakened in every respect that it wasted away and died, more from continued little attacks of fever, than from want of taking sustenance. The case of marasmus *with* measles followed a similar course, but differed at the commencement in having presented the eruption, as well as the premonitory pectoral symptoms &c. of this disease. In the fatal case from diarrhœa *with* measles, however, there was hardly any appearance of the eruption at all.

Thus out of the infant school, which at the commencement of the visitation of measles consisted of 20 children, viz. 17 boys and 3 girls, 4 only were not attacked by this disease, of whom 3 died, 2 of dysentery, and 1 of marasmus and fever, and the other, who had had an attack of dysentery in the preceeding month, escaped everything. It is by no means improbable, then, from what has been stated, that the infection of measles had an influence over these three casualties, though the most characteristic signs of the disease were not present in either of them.

Among all the deaths, only one occurred in a patient above the age of 7, and this was in a European girl aged 15, who had been attacked with measles at the last visitation, when scrofulous ophthalmia developed itself, from which she had become nearly blind. This was then her second attack, which supervened upon dysentery, with which she became affected a few days previously to the appearance of the eruption of measles. The latter was very strong, and accompanied by pectoral symptoms, which rapidly passed into pneumonia, and, together with dysentery, caused her death. On the *post-mortem* examination, these diseases were found to have gone to their extremes in their respective organs.

Sequelæ.—They have been very few indeed, and are noted in the first table. With the exception of a small partial staphyloma, from ulceration of the cornea, no other case of ophthalmia has occurred worth mentioning. There was one case of local dropsy in the leg, which went down under the administration of quinine; a tedious case of dysentery, which ended favourably; and a slight otorrhœa, which still remains uncured; while the cutaneous

diseases are a little less in number than before the visitation, but still preponderate on the girls' side.

The proportion *per cent.* of deaths from measles during the last three visitations of measles has been respectively 5.4, 3.4, and 5.4 ; while the mortality generally, during the time the measles were present, has been respectively 8, 12, and 9, out of strengths of 235, 355, and 308. Hence, if the increased mortality of these several times be taken into account, the last visitation must be considered the mildest ; and this is only fair, if we admit the influence of measles in bringing to an issue previous debility or disease ; while the subsequent affections, which have been attended with any permanent injury, so far as they have developed themselves, could hardly be fewer, since they amount to none but the partial staphyloma just mentioned.

Treatment.—This has consisted simply in administering gentle diaphoretics, mercurial aperients, astringents, tonics and quinine, as they were indicated, with the application of blisters, and, as I have before stated, in one instance the " wet sheets."

Since the last case of measles occurred, there has been nothing worth remarking up to the present time, viz. 1st July 1852. There are now 38 cases in hospital, viz. 19 boys and 19 girls. Of these 28 are slight cutaneous affections, 3 dysentery, 2 diarrhœa, 1 staphyloma, 1 scrofula, 1 abscess of the thigh, 1 dracunculus, and 1 wound. This, compared with the paragraph at page 130, stating the number of cases of ophthalmia, cutaneous affections, and fevers alone, in the third month after the last visitation of measles, is also another proof of the mildness of the one just described, if not of the more advantageous circumstances under which it has been met.

Having now followed the diseases which have occurred generally in the schools for the last five years, let us turn our attention to a few of the particular ones, beginning with small-pox, of which the following table gives the number, age, caste, date of admission, discharge, or death, of all cases which have occurred since the 1st July 1847 up to the present time, together with mention of those who bore marks of vaccination when they were examined :—

Cases of Small-Pox which have occurred in the Central Schools during the five years ending 1st July 1852.

No.	Year.	Sex.	Caste.	Age.	Date of Admission.	Marks of Vaccination.	Date of Discharge.	Death.
..	1847	..	..	..	....	Not recorded.	....	
..	1848	..	..	..	....	,, ,,	....	
1	1849	F.	I. B.	12	10th Mar.	,, ,,	29th Mar.	
2	,,	,,	E.	12	25th May.	,, ,,	14th June.	
3	,,	,,	,,	14	5th June.	,, ,,	17th ,,	
4	1850	M.	,,	13	17th Mar.	,, ,,	30th Mar.	Died.
5	,,	,,	I. B.	8	6th May.	,, ,,	19th May.	Died.
6	1851	,,	,,	10	1st Mar.	Indistinct.	31st Mar.	
7	,,	,,	E.	12	15th ,,	Strong on left arm.	31st ,,	
8	,,	,,	,,	14	24th ,,		22nd April	
9	,,	,,	,,	14	25th ,,	Faint.	,, ,,	
10	,,	,,	I. B.	8	17th April.	No evidence of vaccination	21st May	
11	,,	,,	E.	7	11th May.		22nd ,,	Died.
12	,,	,,	I. B.	12	1st Dec.	Faint.	31st Dec.	

Thus, it will be seen that there have been 12 cases of small-pox during the last five years. Out of these the last seven were examined for marks of vaccination, and among them there were two cases only where they were not present, one of which terminated fatally, and all the rest were more or less mild.

It is proper to mention here, also, that a varioloid form of varicella has prevailed in the spring twice during the last five years, viz. during the months of April and May 1849, when there were 24 cases among the boys and only one among the girls; and again in the month of March 1848, when there were 9 cases among the boys, and 11 among the girls.

During the last two years much attention has been paid to the vaccination of those children who presented no marks of its having been successfully performed; and there is now a *register* for the boys and girls, which the Medical Board has been pleased to order to be kept up, in which the whole of their names appear, with the kind of marks on their arms; and every child who is now admitted is examined for this as well as for other purposes, and has his or her name entered accordingly, with the result of vaccination, if it has been thought advisable to have it performed or repeated once, or twice. Thus, if in a future case of small-pox it should so happen that the arms have not been examined until the new eruption has placed it beyond the power

of the medical officer to determine if they originally bore any marks of vaccination, this *register* will serve to correct the omission.

Of cholera spasmodica there have only been 7 cases during last five years, as will be seen by the table. The last case did not originate in the schools, but occurred in a girl who was spending the Christmas holidays with her friends, and when attacked was immediately brought to the schools' hospital. These were all genuine cases, four of which ended fatally, and three recovered, as will be seen by the following table. They were all treated with port-wine, quinine and ammonia, in small doses, frequently repeated, and great attention paid to keeping up the temperature of the body by the use of dry, warm sheets and blankets, with bottles of hot water placed outside them. Among these cases was one (No. 4) in which there were those remarkable twitchings after death described by Mr. W. F. Barlow in the *Medical Gazette* for 1850. This little girl died eight hours and a half after the attack. She had been the subject of an inveterate impetiginoid eczema from her infancy, which had latterly somewhat abated. There was very little purging, and hardly any vomitting, except after taking medicine, nor was there any pain or cramps. Death took place at 6½ A. M., and the twitchings, which were confined to the lower extremities, and appeared to be those of the tibialis anticus and extensor muscles of the great toe, gradually abated, ending in those of the right foot, which continued even while the *rigor mortis* was present in the left leg, and only ended when this came on in the right one.

Cases of Cholera Asiatica which have occurred in the Central Schools during the five years ending 1st July 1852.

No.	Year.	Sex.	Caste.	Age.	Date of Admission.	Date of Recovery or Death.	Result.
1	1848	F.	E.	3	25th April.	25th April.	Died.
2	,,	M.	I. B.	9	24th June.	1st July.	Recovered.
3	1849	F.	E.	4	5th September.	5th September.	Died.
4	1851	,,	,,	5	21st February.	22nd February.	Died.
5	,,	,,	,,	6	28th ,,	5th March.	Recovered.
6	,,	,,	,,	7	26th April.	29th April.	Recovered.
7	1852	,,	,,	6	7th January.	7th January.	Died.

The next table will show the number of admissions for diseases which are most common in the schools, and the per-centage of deaths from them during the last five years, together with a few of the diseases which are of most interest.

Table of Admissions from Diseases which have been most prevalent in the Central Schools during the five years ending 1st July 1852, including those of Otorrhœa, Variola, Rheumatism, Cholera, Epilepsy, and Dracunculus.

Name of Disease.	No.	Deaths.
Cutaneous affections	1469	..
Fevers	840	4
Diarrhœa	401	5
Thoracic affections	254	2
Ophthalmia	241	..
Cynanche parotidea	131	..
Rubeola	107	6
Dysentery	107	8
Otorrhœa	20	..
Variola	12	3
Rheumatism	13	..
Cholera Asiatica	7	4
Epilepsy	4	..
Dracunculus	3	..

This table must of course be considered as only approximative to the several amounts of the particular diseases mentioned therein, and which have existed in the schools during the period over which it extends, as well as the number of individuals affected ; for many children have doubtlessly complained of, and have been admitted for, affections which others have allowed to pass over unnoticed ; and many have been admitted numberless times for the same disease, and have been entered each time as an additional case. These sources of error are, however, of little consequence, for they are not likely to occur in the severer forms of disease, which are those in which we are of course most interested. A child might fail to complain of a slight eruption or diarrhœa, but this would not be the case with a severe form of either, or of fever or dysentery. The per-centage of deaths from the three last mentioned affections will be found to be, for fever about .47, for dysentery 7.4, and for diarrhœa 1.2.

Besides these diseases, I should allude to a mild form of erysipelas which is not uncommon among the boys, occurring

in one or other of the lower extremities. Like many of these affections, which are so active in England, this seems actually to labour to exist here, and dies away at a remote distance from anything like severity, under the simple administration of quinine. It is attended with pain on being touched, and some little tumefaction of the skin, but seldom with a defined edge. Most of the cases have been in boys about the age of 14, and have been sphoradic, while the rest have been in younger boys, who have had some pustule or slight wound above the foot. It is not uncommon for the sphoradic form to return several times in the same individual, and to occur on the anterior and inner surface of the thigh.

Among the girls, too, where there is hardly any erysipelas, there is an equally common affection, consisting of œdematous swelling of one or both of the lower extremities. This is sometimes attended with a little blush, frequently with hardness and pain of the internal saphæna vein to below the knee, and once or twice an abscess has followed near its upper part. It is attended with more or less pain throughout, especially about the ancle. Sometimes the girls are only laid up with it for a few days, at other times it may last for six weeks, and return two or three times at variable intervals. It generally yields to rest and the horizontal position, with a mild liniment, and the administration of gentle laxatives : this affection occurs about the commencement of puberty, and seems to disappear when menstruation has been fully established ; while the sphoradic cases of erysipelas in the boys also occur about the same period.

Of scrofulous inflammation and abscess of the glands of the neck there has only been one case, which commenced in a european boy aged 8, in December last, who is still in the hospital ; one case only of scrofulous ophthalmia, in a european girl aged 15, who died of measles ; and no cases of caries or necrosis of the bones, and, indeed, few symptoms of scrofula generally.

The last table I have to offer is one on the comparative mortality in the schools during the five years before and the five years since the hospital has been established.

Table of Mortality in the Central Schools for the last ten years, viz. the five years before and the five years since the Hospital was established.

	1st half of 1842.	1843.	1844.	1845.	1846.	1st half of 1847.	Total number of Deaths during the first five years.	2nd half of 1847.	1848.	1849.	1850.	1851.	1st half of 1852.	Total number of Deaths during the last five years.
Strength on the 1st January..	309	352	340	358	320			320	340	329	319	313	313	
Ambustio	..	..	2	..	..	..	2	..	..	..	..	..	..	..
Atrophia	..	2	1	..	..	..	3	..	..	..	..	..	..	..
Cachexia	1	..	..	..	..	2	3	..	..	..	..	..	..	..
Cholera	..	3	10	13	3	1	30	..	1	1	..	1	1	4
Diarrhœa	..	..	1	1	2	..	4	1	1	..	3	..	..	5
Dropsy	5	..	..	..	..	1	6	..	..	..	..	..	..	..
Dysentery	..	..	3	3	..	4	10	1	1	1	..	3	2	8
Debility	..	..	..	1	..	..	1	..	..	..	..	..	..	..
Fever, intermittent	..	..	..	..	..	..	..	..	1	..	..	..	..	1
Fever, remittent	..	..	..	..	..	..	..	..	1	..	1	1	..	3
Gastro-enteritis.....	..	..	2	..	..	..	2	..	..	1	..	..	..	1
Hepatitis.....	..	..	1	..	..	..	1	..	..	..	..	..	..	..
Hydrocephalus	..	..	1	2	..	..	3	..	..	..	..	..	..	..
Marasmus	..	..	..	..	1	..	1	..	..	..	..	..	1	1
Ophthalmia	..	..	..	..	..	1	1	..	..	..	..	..	..	..
Pertussis	..	..	1	..	..	1	2	..	..	..	..	..	..	..
Phthisis pulmonalis	..	..	..	..	1	..	1	..	..	1	..	..	..	1
Rubeola	..	..	..	..	..	5	5	..	..	..	..	..	6	6
Variola	1	..	..	..	..	..	1	..	..	..	2	1	..	3
Total deaths....	..	..	..	..	..	..	76	..	..	..	..	..	..	33*

This table shows that during the five years before the hospital was opened, 76 deaths occurred in the schools, and during the five years since, that the mortality has only amounted to 33, that is less than half of what it used to be, with the strength much the same. It may be observed that the prevalence of cholera in 1844 and 1845 chiefly caused the difference, but cholera has prevailed since to a great extent in the neighbourhood of the schools, viz. in 1849, and only one case occurred throughout the year.

* It is right to mention that there are seldom more than 20 children in the schools under 5 years of age, and seldom more than 2 or 3 under 1 year.

N. B.—There is a fatal case after measles omitted in the first table, for which see No. 6 in the second table, page 137.

NOTES

UPON SOME

ARTICLES OF THE MATERIA MEDICA PROCURED NEAR, AND EXPORTED FROM, ADEN.

BY J. VAUGHAN, Esq.,

Assistant Surgeon, Bombay Establishment.

Presented by the Medical Board.

The following observations, relating to drugs procured near, and exported from Aden, although very brief and imperfect, will, it is hoped, afford sufficient proof that the neighbourhood of Aden abounds in numerous vegetable productions, profitable as articles of trade, and valuable for their medicinal and other uses.

With some of these commercial and scientific men are already acquainted; with others they are less familiar, and of a few it may be presumed that they know scarcely anything. For the sake of science, but especially of medicine, it is to be regretted that some one thoroughly conversant with botany does not direct his especial attention to this part of the world. Nature in these regions has been lavish in her gifts of precious gums and health-giving herbs and drugs; and a wide field of research is open to any one to add to the present stock of medical knowledge a large amount of important and original facts and observations upon the natural productions of these countries. Beyond the sea-board, scarcely anything is known of Eastern Africa, or Southern Arabia, but the authentic reports of the former country lead to the opinion that it is rich, not only in such productions as coffee, cardamoms, gum arabic, gum mastich, myrrh, frank-

incense, manna, orchilla, saffron, safflower, and other familiar drugs ; but also that it abounds in a variety of shrubs, plants, and flowers, possessing properties which may, perhaps, eventually prove a great blessing to mankind.

In the following description of drugs I shall confine myself almost entirely to those which have passed under my own observation ; and shall adopt, as far as practicable, an alphabetical arrangement.

Acacia Vera.—A gum arabic, belonging to the natural family *Leguminosæ*, and the tribe *Mimosæ*—is known in Arabia and on the African Coast by the name of "*Samagh.*" The acacia which yields this gum is generally a small shrub, of dry and withered appearance ; occasionally, however, it shoots out into a tree from twenty to thirty feet high. The Somalis on the North-east Coast of Africa collect the gum during the months of December and January. The process of obtaining it is extremely simple : long incisions are made on the stem and branches, from which the inspissated juice flows, and when dry it is removed. After the gum of a district is gathered, it is sewn up in goat-skins, and brought on camels to the great fair at Berbera, or to some of the small settlements on the coast, and thence shipped for Aden and India.

Three descriptions of the gum are exported from the Somali Coast, styled severally "*Fellick,*" "*Zeyla,*" and *Berbera.*"

1. *Gum Fellick* is collected chiefly by the Mijjerthên Somalis, and those who inhabit the district of Gardaf, or Cape Guardafui. None of that which is esteemed the best finds its way to Aden : a little, however, reaches Maculla and Shehr, on the Arabian Coast, but the largest quantity is usually bought up by the Banians, and shipped direct for India. This gum realizes about Rs. 25 per cwt. in the Bombay market.

2. *Gum Zeyla* is so called from the port of that name.

3. *Gum Berbera* from the district of Berbera. The former of these is sold for Rs. 15, and the latter for Rs. 13 per cwt. in the Bombay bazar.

The Acacia Vera is common throughout Yemen and Hadramaut, but the Arabs do not appear to appreciate the shrub, as

but very little gum is collected by them. It forms, however, an important ingredient in the preparation of their writing ink, to which it gives that glossy appearance so much admired in the old Arabian manuscripts. They also use it occasionally as a demulcent and nutrient, and give it to invalids in the form of mucilage, as we do arrow-root, sago, &c. The Somalis resident at Aden occasionally go a short distance into the interior and gather small quantities, which they immediately sell in the bazar. The natives on the South-east of Arabia between Aden and Maculla also collect a little, but of this scarcely any is exported.

During the year 1851, 250 tons of gum arabic passed through the Aden custom-house, and the selling price was about Rs. 3 per maund of twenty-eight pounds.

Aloe Socotrina.—A species of aloes, belonging to the natural family *Liliaceæ*, is called "*Sabir*" by the Arabs, and "*Elîa*" by the natives of India. Little of the best description of aloes is brought to Aden: the port of Maculla being much nearer to Socotra, nearly the whole produce of the island is carried thither, from whence it is transhipped to Bombay. The price of the drug at Aden is about Rs. 4 per maund.

An inferior description of aloes, called *Black Aloes*, is brought in large quantities to Aden from the interior. It sells for Rs. 2 per maund, and it is reported that 1,600 lbs. passed the custom-house last year.

Ambergris.—Small quantities of this substance are collected on the Arabian Coast, and brought to Aden, where it sells at Rs. 95 per pound. I am not aware that it is used medicinally by the Arabs of this district, but it frequently forms an ingredient in the aphrodisiacs of the Arabs of Turkey.

Baisa Bol in Arabic, and "*Hebbakhade*" in Somali, are the names of a gum resin which is collected by the Somalis on the opposite coast to Aden, and brought here for sale or exportation. In appearance it resembles myrrh, to be hereafter described, and the natives report that the tree from which it is obtained resembles the *Heera Bôl* tree, but is nevertheless a distinct variety. I have not met with any description of this gum, and

my impression is that the tree which produces it is yet unknown to Europeans. It is brought over with myrrh and other gums by the Somalis, but does not appear to be very plentiful, as only 70 maunds passed through the custom-house last year. At Aden it realizes Rs. 2-8-0 per maund, and is sent hence to India and China. It is given to milch cows and buffaloes mixed with their food, for the purpose of increasing the quantity, and improving the quality of the milk. It is also used as a size, and, when mixed with lime, it is said to impart a bright gloss to walls which are covered with it. I am not aware to what other purposes it is applied : possibly it may possess other useful properties, with which the natives are unacquainted. So far as my information extends, none of this particular gum has yet found its way to Europe.

Senna.—The species of cassia which grows commonly in Southern Arabia, and on the opposite coast of Africa, is the "Cassia elongata" ; and the name by which it it known at Aden and in India is "*Senna Makki.*" Of late years the trade in this drug has considerably increased, a large quantity being taken by the Americans in exchange for their cotton longcloths, the principal material used for domestic purposes by the Arabs of the interior. Little or no senna is sent from the Somali country for exportation, though the plant is common there, and grows close to the sea-beach. The Somalis seem to be ignorant of its purgative properties. Senna abounds throughout Yemen and Hadramaut ; from thence it is transported to Mocha and other ports of the Red Sea for exportation. Latterly a considerable quantity has been brought into Aden from the interior. Last year 30 tons passed through the custom-house, and the price current in the bazar is Rs. 1 per pound.

Indigo is called by the Arabs and Natives of India "*Neel.*" A large quantity much inferior to the Indian indigo is manufactured at Mocha, and other towns in Southern Arabia. It is extensively used by the Arabs in dyeing the white cotton longcloths before mentioned, and in fact it pervades almost every part of their dress. Not only their dress, however, but the half naked bodies of the men, are generally, either from accident or

design, stained with the colour of indigo; and they are said to esteem greatly both its colour and peculiar smell. Their females, and especially the Jewish women, on the contrary, prefer a yellow tinge, and hence stain their skins with a decoction of turmeric. The indigo above mentioned sells in the Aden market for Rs. 11 per maund; 16 cwt. of this article was entered at the custom-house last year.

Myrrh, of the natural family *Bursoraceæ*, is called sometimes "*Mōrr*" by the Arabs, but more commonly, in this district, by the Indian name of "*Heera Bôl.*" It is collected in great quantities by the Somalis on the North-east part of Africa, and in the neighbourhood of Hurrur, farther south. It is generally brought to the large fair held at Berbera during the months of November, December, and January, and is there bought up for the most part by the Banians of India, and paid for principally in piece goods: barter, indeed, is the system upon which most commercial transactions are carried on in that district. Occasionally the articles obtained are carried thither direct, but more frequently they are first brought over to Aden, and thence shipped for Bombay.

Within the last few months, small quantities of the best description of myrrh have been collected in a district forty miles to the east of Aden, and brought hither for sale.* This has been done

* This information I give from personal knowledge, and it may serve to correct a statement made by Dr. Malcolmson, and reproduced in Royle's Manual of Materia Medica, that "there is no myrrh produced in Arabia"; and I am further of opinion, notwithstanding the late researches of Dr. Carter, who fixes the limit of the *Libanophorous* regions of Pliny to 52° 47′ E. long., and expresses his belief that the myrrh tree does not exist there, that further investigation eastward from Aden will eventually substantiate the fact recorded by Theophrastus in his *Historia Plantarum*, lib. vi. that the frankincense and myrrh trees were seen growing together in Southern Arabia.

Note by the Secretary.—Dr. Carter does not deny the existence of the myrrh tree in Arabia. On the contrary, he states (Jl. As. Soc. Bombay, vol. iii. part 2, page 273,) that he saw "a balsamodendron, [at Ras Fartak,] if not the same, closely allied to the specimen of the myrrh tree figured by Nees ab Esenbeck," in his *Plantæ Medicales*. But he discredits that the people mentioned by Theophrastus saw the frankincense and myrrh trees growing together on the coast of Arabia,—that is, that where the frankincense region comes close to the shore in this country, the myrrh tree does not exist.

by the Somalis ; but there can be little doubt that as soon as the native Arabs become acquainted with this valuable product of their country, the trade therein will considerably increase.

Four hundred and fifty cwt. of myrrh passed through the Aden custom-house last year, some of which was taken to America by American vessels, but the greater part was shipped for Bombay. The selling price at Aden is Rs. 9-8-0 per maund.

Olibanum.—The *Boswellia serrata* belongs to the same natural family, and is called "*Lubān*"* by the Arabs, and by the Somalis on the opposite coast, where the tree grows in great abundance. I believe that the olibanum is also known in Persia, and in many parts in India, under the name of "*Kundor*" and "*Koodricum*," but not by the Arabs or Somalis. The drug so called I conceive to be the *Boswellia glabra* of Royle, which is quite common in all the Indian bazars. The lubān tree is a native of the South-eastern Coast of Africa, and flourishes on the high-lands which intersect the whole of the Somali country. The hill ranges on the Eastern Coast of Africa are composed entirely of white lime-stone, in some parts so compact as to resemble alabaster; and this appears to be the soil most genial to the tree. In the year 1843, I had an opportunity of observing it not far from Cape Guardafui; but in no instance did I discover it growing out of sand, or loam, as has been supposed. The tree is first met with a few miles inland from the coast, and at an altitude of about 300 feet above the level of the sea. Its appearance is strikingly singular, seeming at first sight to be destitute of roots, and clinging with the most obstinate adherence to the hard, uncreviced rock, by masses of rhomboid, and fantastically-shaped wood. The stem is nearly at right angles with this sub-structure, ascending almost invariably in an upright direction, and attaining the height of from 12 to 50 feet. At the base the circumference is equal to that of a man's thigh, gradually tapering towards the top, where

* This is the classical name for olibanum, and doubtless owes its origin to the same source as the Hebrew "*Wherra.*" I venture, however, to remark that Dr. Royle is mistaken when he says that the Arabic for milk is *lubān*, and supposes the designation to have been given to olibanum from the juice which exudes from the tree. The Arabic for milk is *laban*, which, though derived from the same root as *lubān*, is quite a distinct word.

its branches and leaves shoot off. The wood is white, fibrous, and somewhat soft; the bark, about half an inch in thickness, is of a light brown colour, very succulent, and covered with a glossy cuticle. This usually bursts or cracks with the natural increment of the tree, and may then be removed in cutaneous flakes, when it presents an appearance not unlike that of prepared oil paper, and something similar to a coating observable in the English birch. The old and decayed portions of the tree assume a cinereous hue, and are thus easily distinguished from the younger and more healthy plants. At the proper season, incisions are made in the stem, from which the juice flows in a copious stream (frequently covering the entire stem), until the wounds are closed by the desiccation of the fluid into a gum. In this state the trees glisten in their rich investiture, and, as if vexed at being prevented from pouring forth all their store, the bark swells with the intumescence caused by the abundance of sap within. After the juice is inspissated and dried by the action of the sun and atmosphere, it is scraped off the trees, and from the ground beneath. The natives collect and store it in large loose heaps at particular places on the sea coast, and then pack it in sheep and goat-skins, in parcels weighing about 28 lbs. each. It is transported on camels to the great fair held in Berbera, to be sold and shipped in native vessels for Aden, and other ports on the Arabian Coast, or it is exported to those places before being disposed of. Sometimes, however, it is purchased by the Banians, and sent directly to the Bombay market.

The following are the different kinds of lubān imported for sale into the Aden bazar :—

Lubān matee.—So called from Bunder Mattee, the port from whence it comes. This gum is collected chiefly by the Abardagahala tribe of Somalis. The season for piercing the trees from which this gum is procured is during the north-east monsoon, in the months of July and August.

Lubān hankur, or *Anngure*, from the country of Door Mahomed, and Abardagahala Somalis, so called from Bunder Anngure, the principal place of export. Large quantities of this description of frankincense are brought to Aden, and, when picked and garbled, it sells in the market for one and half dollar

per maund; ungarbled, the usual price for the same quantity is three-fourths of a dollar.

Lubān makur, from the sea-ports of Ras Kurree, Khor Bunder, Alholu, Murya, and Bunder Khasoom, in the country of the Wursangali and Mijjerthên tribes of Somalis, who inhabit the extreme North-east Coast of Africa, about Cape Guardafui. The natives collect the gum in the months of March, April, and May, and, when picked, it realizes one dollar and a half per maund; if not picked, about half that sum. Very little of this quality of gum finds its way to Aden. Almost all is taken to Maccula and Shehr, on the Arabian Coast, from whence it is shipped direct to Bombay.

Lubān Berbera, or *Muslika*, so called from the place from which it is exported. It is collected in the district inhabited by the Aial Yunus, and Aial Hamed Somali tribes, and upwards of 3,000 maunds are annually sent out of the country. This quality of gum is generally garbled before it is exported, and is used largely by the Arabs in their religious services. Its price in Aden is from three-fourths to one dollar per maund. A large quantity of olibanum is also collected in the southern and south-eastern districts of Arabia, and exported from several towns on the coast between Ras Fartak and Marbat. This was the famous thuriferous region, which proved the object of such diligent search in ancient times. The country still maintains its renown for the abundance of the drug which it yields, and for its superior quality, though its value has greatly depreciated since the time of Pliny, who tells us that those who were employed in refining it at Alexandria were hood-winked, to prevent their coveting the precious gum. Three buggalas are annually freighted to Bombay with an entire cargo of the Arabian frankincense from Marbat, and it realizes a higher price in the market than any of the qualities exported from Africa.

Wabei, a toxicodendron, which grows in the Somali country, on the Habber Gerhojis range of the Gooleis mountains. The tree grows to the height of twenty feet, and the poison is obtained by boiling the root in water until it attains the consistency of an inspissated juice. When cool, the barb of the arrow is anointed with the juice, which is regarded as a virulent poison, and it renders a wound tainted therewith incurable.

Hotai is the name of a gum produced by a small thorny tree which grows in the Somali country about Bunder Murya. The tree or shrub is in appearance not unlike that which produces myrrh, and attains the height of about six feet. Its use, as far as I know, is confined to the Somalis themselves, and more especially to their females, who consider it a good detersive of the hair, and it is almost the only one they ever use. When steeped in fresh water it yields a slight lather.

Khat, the name of a drug which is brought to Aden from the interior, and largely used, especially by the Arabs, as a pleasurable excitant. It is generally imported in small camel-loads, consisting of a number of parcels, each containing about forty slender twigs, with the leaves attached, and carefully wrapped, so as to prevent, as much as possible, exposure to the atmosphere. The leaves form the edible part, and, when chewed, are said to produce great hilarity of spirits, and an agreeable state of wakefulness. Some estimate may be formed of the strong predilection which the Arabs have for this drug from the quantity used in Aden alone, which averages about 280 camel-loads annually. The market price is Rs. $1\frac{1}{4}$ per parcel, and the exclusive privilege of selling it is farmed by Government for Rs. 1500 per year.

Forskal found the plant growing in the mountains of Yemen, and has enumerated it as a new genus among the *Pentandria*, under the name of *Catha*. He notices two varieties, and distinguishes them as *Catha edulis*, and *Catha spinosa*. According to his account, it is cultivated in the same ground as coffee, and is planted from cuttings. Besides the effects above stated, the Arabs, he tells us, believe the land where it grows to be secure from the inroads of plague, and that a twig of the khāt carried in the bosom is a certain safe-guard against infection. The learned botanist observes, with respect to these supposed virtues: "*Gustus tamen foliorum tantum virtutem indicare non videtur.*"

Like coffee, khāt, from its acknowledged stimulating effects, has been a fertile theme for the exercise of Mahomedan casuistry, and names of renown are ranged on both sides of the question as to whether the use of khāt does, or does not, contravene the injunction of the Koran—"*Thou shalt not drink wine, nor anything intoxicating.*" The succeeding notes, borrowed chiefly

from DeLacey's researches, may be deemed worthy of insertion here.

Shaik Abdool Kader Ansari Jezeri, a Mahomedan author, in his treatise on the lawfulness of the use of coffee, quotes the following, from the writings of Fukhr-ood-deen Mekki:—"It is said that the first who introduced coffee was the illustrious saint Aboo Abdulla Mahomed Dhabané-ibn-Saïd, but we have learned by the testimony of many persons, that the use of coffee in Yemen, its origin, and first introduction into that country, are due to the learned and godly Ali-Shadali-iboo-Omar, one of the disciples of the holy doctor Nasr-ood-deen, who is regarded as one of the chiefs among the order Shadheli, and whose worth attests the high degree of spirituality to which they had attained. Previous to that time, they made coffee of the vegetable substance called *cafta*, which is the same as the leaf known under the name of *khāt*, and not of *boonn* (the coffee berry), nor any preparation of *boonn*. The use of this beverage extended in course of time as far as Aden, but in the days of Mahomed Dhabané, the vegetable substance from which it was prepared disappeared from Aden. Then it was that the Shaik advises those who had become his disciples to try the drink made from the *boonn*, which was found to produce the same effect as the *khāt*, inducing sleeplessness, and that it was attended with less expense and trouble. The use of coffee has been kept up from that time to the present."

D'Herbelot states that the coffee made from the khāt (*Khawat-oot-Catia*) was prohibited in Yemen, in consequence of its effects upon the brain. On the other hand, a synod of learned Mussulmans is said to have decreed—that as beverages of khāt and cafta do not impair the health, or impede the observance of religious duties, but only increase hilarity and good humour, it was lawful to use them, as also the drink made from the boonn, or coffee berry.

I am not aware that the khāt is used in Aden in any other way than mastication. From what I have heard, however, I believe that a decoction is made from the leaf, resembling tea, by the Arabs in the interior; and one of them, who is well acquainted with our familiar beverage, assures me that the effects are not unlike those produced by strong green tea, with this advantage

in favour of the khāt, that the excitement is always of a pleasing and agreeable kind.

Sanguis Draconis, or dragon's blood, is known in Southern Arabia and Socotra, as also among the Somalis, under the names of "*Dam-ool Akhwên,*" *the blood of the two brothers.* Ainslie and Willand say that it is a product of the *Calamus Draco ;* Thompson refers it to the *Pterocarpus Draco,* and Roxburgh to the *Pterocarpus Indicus.* Not having seen the tree, I cannot decide what particular species of palm yields the drug : thus much, however, I am able to state upon adequate testimony, that the tree flourishes in the Somali country, where it attains the height of 18 feet, and about 26 inches in circumference.

In the island of Socotra, the tree grows in luxurious abundance, together with the plant yielding aloes. It is likewise to be found in Hadramaut, and on the East Coast of Africa ; but little of the drug is exported from the latter places, the natives being either ignorant of its uses and value, or too supine and lazy to collect it.

Dragon's blood, aloes, orchilla root, and ghee, or liquid butter, are the principal, and almost the only exports from Socotra. These are generally taken by buggalas from the Persian Gulf, which arrive about the month of February, after having touched at the principal towns on the coast of Southern Arabia, to dispose of the freight with which they are laden,—chiefly dates, rice, iron, &c. From Socotra the boats proceed to Zanzibar, where the articles obtained at Socotra are transhipped for the Indian markets. They then return laden with grain and other merchandize, and revisit on their homeward voyage several of the towns on the Arabian coast for the usual barter trade, and reach the Gulf about the end of May.

A naval officer of great experience informs me, that whilst at anchor in the Muscat Roads, between the 21st of November and the 10th of December 1845, he calculated, from the number of native vessels which passed that port sailing westward, varying in size from 50 to 252 tons, that the freight of dates amounted at least to 12,880 tons. This fact alone indicates that

an extensive commerce is kept up between the Persian Gulf, Southern Arabia, Socotra, and Zanzibar.

Hitherto very little dragon's blood has been imported into the Aden market; but, as has already been remarked with regard to other drugs common in this region, the demand seems only wanting in order to call forth a plentiful supply.

In addition to the above list, I may mention, as products of this country, and more or less articles of trade among the natives, —gum elemi, gamboge, tortoise-shell, ostrich feathers, kousso, shemen or orchilla, (an inferior kind of which grows in small quantities on Jibel Shumsan in Aden,) also civet, which is imported into this place from the Red Sea, and is much prized by the Arabs as a perfume, waras, pearl-ash, and a fatty substance nut unlike spermaceti. Respecting the three last-named articles, I subjoin the following remarks :—

Waras is the produce of a plant resembling the sesame, and its growth is said to be confined to Southern Arabia. It is brought into Aden from the interior in large quantities for exportation, and the supply has greatly increased within the last few years. It is principally used in dyeing, and yields a good yellow colour, for which the Arabs of this district seem to have a strong predilection. I am informed, moreover, that it is also used medicinally—externally as a lotion, to remove freckles and pustules, (thus forming an important cosmetic in the native toilet,) and internally as a cure for leprosy. Much of this drug finds its way to Persia, and is known under the name of "*Asbery*."

Waras sells in Aden for about Rs. 20 per 28 lbs., and there was entered into the custom-house last year 350 cwt.

Pearl-ash, or *Potassæ carbonas impura*, is brought into the Aden market every day, in large circular cakes, and is extensively used for washing clothes, as it saves the dhobies trouble, and is much cheaper than soap. The wood producing this alkali grows in the immediate neighbourhood of Aden, and the process of combustion is constantly going on along the northern shore of the harbour.

What has been mentioned as a "fatty substance not unlike spermaceti" is frequently brought into Aden in large masses,

weighing sometimes 20 lbs. The colour is white, and it emits a very powerful and offensive odour. It is found either on the beach, or floating on the sea all along the coast. To all appearance, it is the produce of a cetaceous animal, most probably a whale, or dolphin : it seems to be a portion of the blubber, from which a great part of the oleine has oozed out, as the specimens which I have examined consist chiefly of fibro-cellular tissue, enclosing but a small quantity of spermaceti. The Arabs, however, use it, when melted over a slow fire, as an unguent, and consider it almost in the light of a specific in rheumatic affections.

Concluding Remarks.—Science may justly be styled the hand-maid of trade; and in proportion as general information and civilization extend, commerce will also increase and thrive. By the enterprize of trade, fresh roads for research are being opened, and a traveller may now proceed with comparative ease to places which a few years ago would have been pronounced incapable of access to Europeans.

Since Aden was declared a free port, the concourse of natives from the opposite shores of Africa, and from the sea-coast of Southern Arabia, has considerably augmented,—a satisfactory proof that trade is increasing; and I am persuaded that, under judicious management, Aden bids fair to become the great commercial mart of this part of the world. Whilst its visitors and strangers are becoming more and more acquainted with our habits, they will begin to apprehend that their own interests are in a measure bound up with ours; they will gradually lose their jealousy, and eventually become our guides to the homes which they inhabit. This nearer approach to us increases year after year, and the hope may be reasonably entertained, that the present generation of Somalis and Arabs who frequent Aden will not have passed away, before the skill and energy of Europeans shall have taken advantage of this favourable feature to penetrate into their country, and to explore its now hidden resources and treasures.

CASES

OF

ABSCESS IN THE LIVER, POINTING EXTERNALLY AND OPENED BY INCISION, OR DISCHARGING INTO SOME OF THE ABDOMINAL OR THORACIC PASSAGES AND CAVITIES; WITH REMARKS ON THE TREATMENT BY OPERATION.

BY M. STOVELL, Esq.,

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Presented September 1852.

At a former meeting of the Medical and Physical Society, a resolution was passed that the members should be requested to forward to the Society all cases of hepatic abscess they might have met with, in which the operation of puncture had been had recourse to, or in which the abscess had discharged spontaneously, whether externally, or into any of the cavities or passages. I therefore beg to lay before the Society the result of the experience afforded by the European General Hospital on these points, during the six years I have been Surgeon to it, viz. from June 1st 1846 to May 31st 1852.

It may be well, in the first place, to give a table, showing the total number of admissions with hepatitis during this period, the number discharged cured, and the number and per-centage of deaths.

Cases of Hepatitis admitted into the European General Hospital, during the six years extending from June 1*st* 1846 *to May* 31*st* 1852.

Year.	Total Admissions.	Discharged Cured.	Died.	Per-centage of Deaths.
1846-47	59	49	10	16.949
1847-48	31	27	4	12.903
1848-49	67	57	11	16.417
1849-50	55	47	7	12.727
1850-51	43	35	5	11.627
1851-52	44	36	11	25.000
Total....	299	251	48	16.053

I will next give a table showing the number of cases in which hepatic abscesses pointed externally and were opened, or which discharged their contents into certain passages or cavities; and it will be observed that no instance has occurred of an abscess opening spontaneously, either externally or into the pleural cavity.

Cases of Hepatitis, admitted from June 1*st* 1846 *to May* 31*st* 1852, *in which Abscesses formed, and either pointed externally and were opened, or discharged their contents into some of the Abdominal or Thoracic Passages and Cavities.*

Year.	Pointed Externally, and were opened.		Discharged into the Alimentary Canal.		Discharged into the Cavity of the Peritoneum.		Discharged into the Bronchi.	
	Cured.	Died.	Cured.	Died.	Cured.	Died.	Cured.	Died.
1846-47	1	..	..	1	..	..	1	..
1847-48	..	..	..	..	..	..	..	..
1848-49	..	2	..	1	..	1	1	2
1849 50	..	1	..	..	..	..	1	2
1850-51	..	1	..	..	..	..	1	..
1851-52	..	1	..	..	..	..	2	1
Total....	1	5	..	2	..	1	6	5

It will thus be seen, that out of 299 cases, the total number of admissions with hepatitis, abscesses pointed externally and were opened in 6, or 2.006 per cent.; discharged into the alimentary canal in 2, or 0.668 per cent.; into the peritoneal cavity in 1, or 0.334 per cent.; and into the bronchi in 11, or 3.678 per cent. It will further be seen, that out of 6 cases in which abscesses were opened, 5, or 83.333 per cent., proved fatal, while out of 11 which opened into the bronchi, only 5, or 45.455 per cent., proved fatal. These relative results seem to prove that the prognosis in cases of hepatic abscess is far more favourable when the abscess discharges into the bronchi than when it points externally and is opened. As this, however, is, I believe, not in accordance with the majority of statements on these points, it might be interesting to compare these limited results with others on a more extended scale, should the Society be in possession of sufficient data to enable them to do so. The two cases which opened into the alimentary canal, and the one which opened into the abdominal cavity, proved fatal.

Having thus given a summary statement of the general results on these points, I will next give a brief abstract of the leading features in the history of twenty cases, which terminated under some one or other of these four heads.

Case I.—*Abscess in the Liver, pointing externally and opened. Recovery.*—James Lewis, Pauper, 26 years of age, and five years resident in India, was admitted on the 2nd January 1847 with a slight attack of acute hepatitis, but he soon got well, and was discharged cured on the 16th of the same month. On the 4th of May of the same year, however, he was re-admitted with a more severe attack: he had considerable pain in the right hypochondriac region, was unable to take a deep inspiration, his breathing was somewhat hurried, and his countenance anxious. Leeches were applied, and he took calomel, purgatives, and antimony. For a time he seemed to improve, but the mercury did not exert its specific influence, and towards the 13th an evident fulness in the epigastrium began to make its appearance. The calomel was omitted, and he took mild tonics. By the 22nd there was distinct fluctuation, and a small incision was

made into the abscess. The discharge of pus became so profuse, that it was considered advisable to close the aperture, and open it only twice a day. On each occasion, for some days, about twelve ounces of pus escaped. By the end of the month the discharge became less copious, and it finally ceased about the middle of July. He was greatly relieved by the opening of the abscess: all bad symptoms disappeared, and with the use of tonics, and a nourishing diet, including beer and wine, he rapidly recovered his strength and flesh, and was discharged in good health on the 9th of August.*

Case II.—*Abscess in the Liver, pointing externally and opened. Death. Post-mortem examination.*—John Blundell, Seaman of the ship *St. Lawrence*, 25 years of age, lately arrived from Europe, was admitted on December 10th 1848, with acute hepatitis. He had great pain in the right hypochondrium, with extreme tenderness on pressure, and had been suffering three days. He had been bled from the arm previous to admission by a surgeon on board. He was leeched freely, and took calomel, opium, and purgatives. By the 14th the mercury was beginning to exert its specific influence, and in a day or two his mouth became very sore, but at the same time a fulness became perceptible in the epigastrium, and soon afterwards he began to sweat profusely at night. His bowels, too, became relaxed, and he took mild tonics and opiates. On the 10th of January there was distinct fluctuation, and an incision was made into the abscess. A large quantity of pus escaped, and the discharge continued copious till the end of the month, when it became very slight. He was by this time very emaciated, and he gradually sunk, and died February 21st.

Post-mortem examination.—The liver weighed four pounds, was of a palish colour, and did not bleed on making an incision into it. It extended through the epigastrium towards the left hypochondrium. The cavity of the abscess was nearly filled up, and the incision which had been made into it had united, and

* I have lately had an opportunity of seeing this man, and he has continued in excellent health during the five years which have elapsed.

was marked by a cicatrix at the anterior surface of the right lobe, near the margin. The lining membrane of the colon was found in a sphacelated state.

Case III.—*Abscess in the Liver, pointing externally, and opened. Death.*—Maria Duart, Pauper, 27 years of age, and 9 years resident in India, was admitted on the 27th December 1848, with acute hepatitis, for which she had been under treatment for some time previous to admission. She was depleted locally, and took calomel, with antimony and opium, and occasional purgatives. In a few days her mouth became affected, and the mercury was omitted. She improved gradually, and left the hospital on 26th January. On the 1st March, however, she was re-admitted with the same complaint, but again improved, and left hospital on the 22nd. On the 6th June she was again admitted. She had now a small tumour in the right dorsal region, over the angles of the 7th and 8th ribs. This was opened, and there was a considerable discharge of thick pus, traceable to to an abscess in the liver. She took tonics, and was put on a nutritive diet. For a time she appeared to do well, but the discharge continued copious, and she gradually sunk, and died on the 1st of August. Her friends would not allow a *post-mortem* examination.

Case IV.—*Abscess in the Liver, pointing externally, and opened. Death.*—George Davis, Seaman in the Indian Navy, 26 years of age, and three years resident in India, was admitted on 19th November 1849, with an attack of acute hepatitis, for which he had been treated for a fortnight on board ship. He had been cupped twice, and had been taking calomel, opium, &c. On admission, his general health was greatly impaired, and there was much pain, and some degree of fulness in the right hypochondrium. He soon began to sweat profusely at night, and the fulness became more distinct, and evidently arose from the formation of an abscess. On December 1st an opening was made into the tumour, now fluctuating, and twenty-two ounces of pus streaked with blood, were evacuated. He took tonics and a good diet, and had an opiate at night. For a time he seemed to

improve: the surface, which had been hot and dry, became relaxed and cool; the pain, which had been severe, greatly diminished, and the tongue, which had been dry, became moist. But this improvement was only temporary: the discharge continued copious, the exhaustion became extreme, and he gradually sunk, and died on the 14th.

Post-mortem examination seven hours after death.—The liver was found greatly enlarged, encroaching considerably on the thoracic cavity, and extending into the left hypochondrium. The abscess occupied nearly the whole of the right lobe, and still contained a large quantity of pus. The remaining abdominal, and the whole of the thoracic viscera, normal.

Case V.—*Abscess in the Liver, pointing externally, and opened. Death. Post-mortem examination.*—Thomas Hewett, a pauper, 37 years of age, was admitted on the 19th of December 1850, with severe hepatitis. He said he had been ill nearly a month, and had been under the care of a Portuguese practitioner at Mahim. There was considerable fulness in the right hypochondrium, and great emaciation; his skin was dry, and above the natural temperature; his pulse 120, small and feeble; tongue coated down the centre, but moist; bowels irritable: there was evidently an hepatic abscess. He took nitric acid and opium. By the 24th, there was distinct fluctuation in one spot, about three quarters of an inch below the margin of the ribs. I introduced a lancet, and gave exit to several ounces of pus. A probe entered very readily to the depth of four inches. He felt much relieved for a day or two, and the discharge became very slight; but he gradually sunk, and died on January 3rd.

Post-mortem examination eighteen hours after death.—Chest.—Viscera healthy. *Abdomen.*—In the right lobe of the liver there was the cavity of a large abscess, containing very little purulent matter, and communicating with the incision which had been made. Adhesive inflammation had taken place between the surface of the liver and the abdominal parietes at the spot which had been opened; thus none of the contents of the abscess had escaped into the peritoneal sac. The liver was considerably enlarged, and the gall-bladder greatly distended; the mucous

lining of the large intestines was dotted with small patches of ulceration. Other viscera healthy.

Case VI.—*Abscess in the Liver, pointing externally, and opened by incision. Death. Post-mortem examination.*—James Carroll, Seaman of the ship *Somnauth*, 20 years of age, was admitted on 22nd July 1851, with hepatitis, his ship having arrived in Bombay the preceding day. He had been suffering several weeks from pain in the right hypochondrium, and had been without medical attendance, no surgeon being on board his ship. On admission, there was tumefaction in the right hypochondrium, which was exceedingly painful when touched. His countenance was blanched and had an anxious expression, and his bowels were irritable. Leeches were applied, and he took mercury, opium, and ipecacuanha. For a time he seemed to be doing well; the pain subsided, though not the swelling; his bowels became regular, and his appetite improved. On August 11th, his system not being affected with the mercury, it was omitted, and tonics were given. By the 1st of September the tumour became more prominent, and there was evident fluctuation, though not near the surface. Poultices were then applied. On the 3rd the abscess was opened by a small incision and a large quantity of pus was evacuated. The abscess discharged freely till the middle of the month, when the pus began to diminish considerably in quantity. He was taking tonics and a nourishing diet, but he did not improve. His bowels again became irritable, he had night sweats, his appetite failed, and he gradually became exhausted, and died on September 27th.

Post-mortem examination.—Abdomen.—Peritoneal surfaces normal. Adhesion had taken place between the hepatic and parietal portions. A considerable cavity was found in the right lobe, containing about eight ounces of thickish yellow pus, and the walls of the abscess were uneven, rough, and considerably indurated. The colon, throughout its whole extent, was deeply ulcerated in irregular patches, and its coats thickened.

Case VII.—*Abscess in the Liver, opening into the Intestines. Death.*—Richard Farrow, Sub-Conductor in the Ordnance Department, 39 years of age, who had repeatedly suffered from attacks

of hepatitis while in the Deccan for many years, was admitted into hospital on 27th October 1846, with a return of the complaint, which had terminated in suppuration. Previous to admission he was suddenly seized with vomiting, and he also passed a large quantity of pus per anum, evidently from the opening of an abscess into the intestines. He was in a very exhausted state, and he sunk and died on the 8th November. His friends would not permit a *post-mortem* examination.

Case VIII.—*Abscess in the Liver, opening into the Intestines. Death.*—Margaret Stanton, a woman on the Pension List, 20 years of age, and born in India, was admitted on 10th July 1848, with acute hepatitis. She had great pain in the right hypochondrium, much increased on pressure, and a dry hot skin. She had been ill some days without treatment. She was freely depleted locally, and took calomel, antimony, and purgatives. By the 14th her system was affected with the mercury, and the pain abated considerably, but towards the end of the month there was some degree of fulness in the side, the pulse again became high, and she lost strength and flesh. Towards the middle of August she had a return of pain, an increase of the fulness, and profuse night-sweats. During this time she was taking mild tonics and a nourishing diet. Suppuration had evidently taken place, and on the 25th August she passed per anum a considerable quantity of pus, and continued to do so at intervals till the end of the month. She rapidly became exhausted, and died on September 3rd. Her friends would not permit a *post-mortem* examination.

Case IX.—*Abscess in the Liver, opening into the Peritoneal Cavity. Death. Post-mortem examination.*—Louis Templan, Clerk in the Secretariat, 30 years of age, and one year resident in India, was admitted on 25th January 1849, with hepatitis. He was depleted locally, and took mercury, opium, and purgatives. He rapidly lost strength and flesh, and became so exhausted, that on February 2nd he was partially collapsed, though perfectly sensible. Stimulants were given, but without improvement. On the 4th his abdomen became tympanitic, but he had no pain, and he sunk rapidly, and died the following day.

Post-mortem examination.—On laying open the abdominal cavity, it was found to contain a considerable quantity of pus, which had escaped from a large abscess in the right lobe of the liver. The other viscera normal.

Case X.—*Abscess in the Liver, opening into the Bronchi. Recovery.*—Edward Simmons, an Engineer in the Steam Department, 32 years of age, and two years resident in India, was admitted on 26th April 1847, with acute hepatitis. He had been ill four days, and had been under treatment by the Port Surgeon. He had been bled and leeched, and had taken calomel and purgatives. On admission he had pain in the right hypochondrium, at times shooting up to the shoulder, increased on pressure, and on attempting to take a full inspiration. He was unable to lie on the left side; felt a heavy dragging pain if he attempted to do so. Pulse 130, somewhat hard. He was leeched, and took calomel, antimony, and purgatives. By May 1st he was quite free from pain ; his pulse was down to 100, and quite soft, and his mouth was affected with mercury. For some days his only complaint was "soreness of his mouth." He continued quite free from pain, his pulse fell to 84, and his general health was improving till the 12th, when he was suddenly seized with severe cough, and he expectorated about half a pint of pus. His mouth was still sore. His pulse rose to 100, but he had no pain. He took morphia and antimony. The following day he again expectorated a considerable quantity of pus, but it soon became less, and finally ceased by the 17th. He then took tonics. His general health rapidly improved, and on June 8th he was discharged perfectly well.

Note.—This man was subsequently almost constantly in Bombay for several years, and never again suffered either from hepatic or pulmonary irritation, although a hard liver. A few months ago, however, he was admitted with delirium tremens, and died. The *post-mortem* examination became interesting from the circumstance of his previous hepatic disease. On examination, the lower surface of the right lung, to the extent of about three inches in circumference, was found closely adherent to the diaphragm, and there was a corresponding and co-extensive

adhesion between the diaphragm and upper surface of the liver. The liver itself was slightly enlarged, yellowish in colour, fatty and friable, easily giving way under the slightest pressure, and the lower portion of the right lung, to slight extent, was hepatized.

Case XI.—*Abscess in the Liver, opening into the Bronchi. Death. Post-mortem examination.*—Amelia Searles, Pauper, 34 years of age, and born in India, was admitted on 6th October 1848, with acute hepatitis, of six days' duration. She had much pain in the region of the liver, increased on pressure. The surface was above the natural temperature, the pulse 108, small, and depressed, and her bowels were irritable. Leeches were applied, and she took calomel and opium. By the middle of the month the pain subsided, though her mouth had not been affected with the mercury, and her health improved very much. The mercury was omitted, and she took tonics. On the 3rd November, however, she was seized with a feeling of suffocation and with cough, and she expectorated a considerable quantity of pus. This was followed by great depression, and sinking of the pulse. Stimulants were given, but she continued to sink, and died on the 6th.

Post-mortem examination.—Liver enlarged, extending below the margin of the ribs, and into the left hypochondrium; structure firm and somewhat granular. A large abscess was found to occupy the right lobe, and adhesions connected it with the diaphragm and lower surface of the lung, while a large opening was found leading into the bronchi. A very large quantity of thick pus was contained in the abscess, a portion only having escaped into the bronchi. The lower lobe of the right lung was gorged with frothy serum, and was also in the first stage of hepatization. Intestines and other viscera normal.

Case XII.—*Abscess in the Liver, opening into the Bronchi. Recovery.*—Charles Steel, Seaman of H. M. Brig *Albatross*, 24 years of age, and of three months' service in India, was admitted on the 18th of November 1848, with acute hepatitis, for which he had been treated three days on board. On admission he had severe pain in the right hypochondrium, much increased both on pressure and on attempting to take a full

inspiration; pulse 110, full. He was depleted, both generally and locally, and he took calomel, antimony, and purgatives. By the 30th his mouth became affected with mercury, and though much reduced, he was free from pain, and there was no fulness in the hypochondriac region. For a day or two saliva flowed freely from his mouth, but though free from pain, he was restless and uncomfortable till December 11th, when an abscess opened into the bronchi, and he expectorated about four ounces of pus. For some days he continued to expectorate six or eight ounces of thick reddish pus. By the end of the month the expectoration totally ceased. His bowels were irritable for a time, but he gradually recovered strength and flesh, and was discharged quite well on the 7th March.

Case XIII.—*Abscess in the Liver, opening into the Bronchi. Death. Post-mortem examination.*—James Burrows, Steward's Mate in H. M. Ship *Melampus*, 24 years of age, and of one year's service in India, was admitted on 15th February 1849, with acute hepatitis, for which he had been treated on board since the end of the previous month. On admission he had still a good deal of pain in the region of the liver, with a hot dry skin, and a pulse up to 100, but without much power. He was leeched, and took calomel, ipecacuan, opium, and purgatives. By the 22nd his mouth was distinctly affected with the mercury, which was then omitted. The pain subsided, but the pulse continued above 100, and by the 27th there was evident fulness in the region of the liver. He was now becoming much exhausted. On March 2nd he expectorated a considerable quantity of pus; his breathing became hurried, his skin hot, his tongue brown and dry, and his pulse rapid and feeble. He soon afterwards became delirious, and died on the 5th.

Post-mortem examination.—A large abscess occupied nearly the whole of the right lobe of the liver, a small portion only of the contents having escaped into the bronchi. No other morbid appearances were presented.

Case XIV.—*Abscess in the Liver, opening into the Bronchi. Death.*—Margaret Ann Keys, the wife of a Serjeant in the Ordnance Department, 35 years of age, and eight years resident

in India, was admitted on the 19th September 1849, with acute hepatitis. She had been ill several days. She was leeched, and took calomel, antimony, and purgatives. By the 24th there was distinct ptyalism. The mercury was omitted, but her mouth became very sore. The pain subsided, but her stomach was irritable, she slept badly, and her strength daily diminished. She took little beyond mild tonics, and an opiate at night. Owing to some family affairs she was very anxious to go home, and left hospital on the 9th October. On the 23rd, however, she was re-admitted, with a return of the pain, which rendered it necessary to apply leeches, and give a little calomel and antimony. The pain once more subsided, but she was exceedingly feeble, and on November 26th, after a little cough the previous day or two, she expectorated a considerable quantity of pus. This continued for a month, by which time she was quite exhausted, and she died on December 26th. Her husband would not permit a *post-mortem* examination.

Case XV.—*Abscess in the Liver, opening into the Bronchi. Recovery.*—Robert Ranford, Seaman in the ship *John Bull*, just arrived from Europe, 34 years of age, was admitted on the 17th December 1849, with acute hepatitis. He had severe pain in the right hypochondriac region, increased both on pressure and on attempting to take a full inspiration. Pulse 94, full; tongue coated, yellow, and dry; skin harsh. He was depleted both generally and locally, and he took calomel, ipecacuan, opium, &c. He was subsequently blistered. By the 23rd his gums were slightly tender, the pulse had fallen to 84, and was quite soft, and the whole surface was of its natural temperature, soft and moist, but he still had pain in the region of the liver. On the 25th he was troubled with cough, and he expectorated a small quantity of thick pus, which he said he distinctly felt coming from the side affected. This purulent expectoration continued till the 2nd of January, when it ceased. From that date he rapidly gained strength and flesh, and left the hospital on the 28th January quite well.

Case XVI.—*Abscess in the Liver, opening into the Bronchi. Recovery.*—Edward Miller, Gunner in the Indian Navy, 29 years

of age, and of five years' service in India, was admitted on the 24th April 1850, in a weakened state from an attack of acute hepatitis, which commenced on the 10th of the previous month at Aden, and for which he had been sent to Bombay on sick certificate. He had been depleted freely, both generally and locally, and his system had been affected with mercury. On admission he had still slight pain under the margin of the right ribs, and this was increased on pressure; his bowels were in a relaxed, irritable state, his tongue furred, and his pulse rapid and weak. He took opiates, which soon checked the diarrhœa, but he was seized with cough, and on the 26th he expectorated about an ounce of pus, mixed with a little blood and mucus. He then continued to expectorate about two ounces of pus daily till the end of the month, when it rapidly diminished in quantity, and by the 5th of May the expectoration had totally ceased. The pain had quite subsided, the bowels had become regular, and the tongue and pulse normal. After recovering strength and flesh rapidly, he was discharged on the 14th May to the receiving ship *Hastings*, quite free from disease, though still weak.

Case XVII.—*Abscess in the Liver, opening into the Bronchi. Recovery.*—Edward Bevan, Quarter Master in the Indian Navy, 36 years of age, and six years resident in India, was admitted on 19th March 1851, with hepatitis, and was discharged apparently well on the 8th of April. On the 26th of that month, however, he was re-admitted with a return of the attack, having in the interim been drinking a good deal. On admission, while on leave ashore, he stated that he had just been seized with severe pain in the region of the liver, with cough, and with great difficulty of breathing, and he was freely expectorating purulent sputa, an abscess in the liver having evidently opened into the bronchi. There was some heat of skin and acceleration of pulse, and he took antimony and ipecacuan, combined with opium. For some days the cough returned in paroxysms, lasting about an hour, and during each of these he expectorated pus profusely, mixed with blood. The heat of skin subsided, however, in a day or two, and by the 9th of May the expectoration had totally ceased.

The cough soon afterwards subsided, and the pain disappeared. His health then improved rapidly, and he was discharged quite well on the 2nd June.

Case XVIII.—*Abscess in the Liver, opening into the Bronchi. Recovery.*—George Bulline, Gunner in the Ordnance Department, 27 years of age, and five years resident in India, who had several times been admitted into hospital during the preceding five years with slight attacks of dysentery, diarrhœa, and hepatitis, was again admitted with the latter disease on the 12th January 1852. He had considerable pain under the margin of the right ribs, increased both on pressure and on attempting to take a full inspiration. He said he had been ill about a week, and had been taking purgative medicine. Being of a delicate and weakened constitution, he was not bled from the arm, but leeches were applied, and he took calomel, antimony, and opium. By the 19th his gums were swollen, and his mouth a little tender, the pain had quite subsided, and his pulse was normal. The mercury was omitted, and he took nitric acid. On the 28th his bowels became irritable, he began to sweat at night, and his pulse became quick. There was neither fulness nor pain in the hypochondriac region, but on percussion of the right side of the chest, hepatic dulness extended as high up as the nipple. During the night of February 2nd, he was suddenly awoke from his sleep by severe coughing, and he expectorated about eight ounces of pus, an abscess in the liver having evidently opened into the bronchi. For some time he continued to expectorate about eight ounces of pus during the twenty-four hours, but chiefly at night. His general health, however, soon improved. He began to perspire less profusely at night, his bowels became regular, he was soon free from all local uneasiness, and his appetite began to return. He took nitric acid with morphia, and a nourishing diet. By the middle of February the quantity of pus had diminished to about four ounces daily, and by the end of March it had totally ceased. He then gained strength and flesh rapidly, and left hospital quite well on the 26th April.

Case XIX.—*Abscess in the Liver, opening into the Bronchi. Death. Post-mortem examination.*—Henry Nelson, a Bricklayer

belonging to the Railway establishment, 26 years of age, and one year resident in India, was admitted on 17th January 1852, from Tanna, where he had been under treatment for hepatitis since the 20th of December, by the Civil Surgeon of that station. For four months previous to the attack he had been constantly exposed to the sun by working daily on the railroad. He had been leeched freely, and his system had been affected with mercury. On admission he was much reduced in strength; there was diffused fulness over the right hypochondrium, and there was hepatic dulness, on percussion of the chest, as high as the nipple, but he was quite free from pain. Pulse 86, soft and small. He said that previous to this attack he had never been ill since his arrival in India. He took nitric acid; and the nitro-muriatic acid solution was applied externally. No improvement took place. He began to have febrile accessions towards evening, terminating in profuse sweats. During the night of February 17th he was suddenly seized with severe cough, and he expectorated about four ounces of pus, tinged with blood. He now took morphia, in addition to the nitric acid, and as much nourishment as he could bear, but no improvement took place; the night-sweats continued, the purulent expectoration did not diminish in quantity, his feet became œdematous, his strength became exhausted, and he died on 5th May.

Post-mortem examination five hours after death.—Body greatly emaciated. Left lung perfectly normal. Upper lobe of right lung also normal, but the middle and lower lobes were infiltrated with a thin sanious fluid, and the base of the latter was adherent to the diaphragm. There was a corresponding and co-extensive adhesion between the diaphragm and the upper surface of the right lobe of the liver. The right lobe contained a large abscess, which had been discharging its contents through an opening in the diaphragm into the bronchi. Left lobe and other viscera normal. Peritoneal surfaces also normal.

Case XX.—*Abscess in the Liver, opening into the Bronchi. Recovery.*—Daniel O'Connell, Conductor in the Ordnance Department, 39 years of age, and 22 years resident in India, after suffering occasionally for some years from hepatic derangement,

was admitted on 12th of April 1852, with acute hepatitis, for which he had applied leeches previous to coming to hospital. On admission, he had severe pain under the margin of the right false ribs, increased both on pressure and on attempting to take a full inspiration. There was some degree of fulness in the right hypochondrium, and there was hepatic dulness as high as the 4th right rib. He was depleted locally, and he took calomel, antimony, and purgatives. By the 17th he began to sweat profusely at night, and, apprehensive of the formation of an abscess, I omitted the calomel, and substituted mild tonics, with the local application of the nitro-muriatic acid solution. During the night of the 23rd he was seized with great dyspnœa and with cough, and he expectorated about four ounces of pus, an abscess having evidently opened into the bronchi. Morphia was added to the nitric acid. For three or four days he continued to expectorate about four or five ounces of pus daily, but it then began to diminish in quantity, and by the beginning of May the expectoration had totally ceased. All local uneasiness had subsided, the pulse had become natural in frequency, though small and weak, and the night-sweats soon ceased. He then rapidly recovered strength and flesh, and left hospital on May 24th, quite well.*

Remarks.

Having thus laid before the Society the results afforded by the records of the European General Hospital, on the points adverted to, during the six years I have been connected with it, I might here close my paper, but there is one division of the subject of such great importance, as far as treatment is concerned, that I shall, perhaps, be pardoned if I venture to make a few remarks on it, with the view of eliciting the opinion of the Society. I allude to the opening of hepatic abscesses. On few subjects of equal importance of late years have there been greater differences of opinion among practical men, and if the

* Cases I., VI. and XVII. were treated by Assistant Surgeon Mead; II., IV., XII., XIII. and XV. by Assistant Surgeon Browne, M.D.; III., VIII., IX., XI. and XIV. by Dr. Burn; and V., VII., X., XVI., XVIII., XIX. and XX. by myself.

Society are in possession of data sufficiently accurate as well as numerous, from which to deduce correct conclusions, it would be most desirable to point out with more distinctness and precision than has hitherto been done—1st, the exact state of parts locally in which alone an operation should ever be resorted to; 2ndly, the most favourable moment, viewed both constitutionally and locally, for operating; and 3rdly, the best method of procedure to adopt under the different local conditions in which an operation might be required.

The practice of opening hepatic abscesses, both by the knife and cautery, we all know is of very ancient date; but it is equally certain we are indebted to modern times for reducing the practice to anything like a system, founded on sound pathological principles; and, perhaps, it would be neither uninteresting, nor altogether useless, to take a brief glance at some of the principal contributions to medical literature on this subject during the last hundred years. The earliest case recorded in print during this period is, I believe, the one related by Dr. Bogue, which occurred in 1759, at Negapatam, when Dr. Bogue was in charge of the Naval Hospital at that station, at the time Admiral Pococke's squadron was in the Indian seas. In May of that year a seaman was admitted with scurvy. Some days afterwards he had an attack of hepatitis, which terminated in the formation of an abscess, pointing externally. Dr. Bogue says:—"I forwarded the suppuration with poultices, and on the 13th of July, in the cool of the evening, being about a month after his first complaining of the pain of that side, I laid the tumour open about six inches, and let out near three pints of well-digested matter. I then introduced my hand into the left lobe of the liver, which I found almost entirely suppurated, and containing several honey-comb cavities, the edge of the liver adhering to the peritoneum. He was dispirited on the thoughts of its being opened, but bore the operation better than could be expected in that low state to which he was reduced. I cautiously filled the cavity with dry soft lint, and gave him a julep, with the tincture of bark to take frequently. Next morning after the operation, there was a large discharge of good matter, and I found one sinus leading obliquely

down towards the navel, and another towards the back, each about two inches in length. I laid them both open to the bottom; and these were the only openings I had occasion to make, though I found another sinus leading towards the chest. That day I dressed him as before, and the next day, after having fomented, I threw into the cavity an injection of barley-water and tincture of myrrh, which I repeated three or four times, until I thought the parts were sufficiently cleansed of matter." Dr. Bogue then continues his statement of the case, and ends by saying,—"In three weeks the wound was not more than an inch deep, and but two inches in length, florid granulations daily forming; and towards the end of of August, the parts being almost cicatrized, the patient was sent on board his ship to do duty, the Admiral expecting every day to meet the French Squadron. He was killed on the 10th of September following, in the action between the English Squadron, commanded by Admiral Pococke, and the French by Count D'Ache."*

The next contribution on the subject was, I believe, the one by Dr. Clark, of Dominica, who published in the *Medical Commentaries* for 1789 an interesting collection of 13 cases in which he had opened abscesses of the liver, and with the most extraordinary success, inasmuch as eight of this number recovered. The only peculiarity in his treatment, after the operation, was syringing the abscess for some days with warm milk and water. Four years after this, Dr. Saunders published his work on the diseases of the liver, but the subject of opening hepatic abscesses had apparently at that time not excited much attention, for he dismisses it in a few words. He merely says—"If the abscess has pointed to a determined part of the integuments, we need not wait for a spontaneous opening, but by means of a lancet may discharge the matter. Such abscesses are seldom in haste to

* *Essay on Diseases incidental to Europeans in Hot Climates*, by James Lind, M.D., p. 95. In the same work, p. 94, is a brief allusion to the great amount of sickness among the men of the squadron under the command of Admirals Watson and Pococke during the monsoon of 1757 at Calcutta. Dr. Bogue says that half the men were laid up, and that out of three ships of the line and a twenty-gun ship, and those not fully manned, upwards of 200 men died in six months, the principal disease being "putrid fever."

heal, nor is it desirable, until the cavity of the abscess shall have been filled up by healthy granulations. During this process, which is sometimes tedious, the health gradually returns."*

A long silence on the subject then prevailed for many years, and, with one solitary exception, continued unbroken, even by the periodical literature of the day. The *Transactions of the College of Physicians*, the *Annals of Medicine*, and *Medical Facts and Observations* successively made their appearance, but they contained no contribution on the subject; and the same may be said of the earlier numbers of the *London Medical Journal*, the *Medical and Chirurgical Review*, the *Medical and Physical Journal*, and the *Edinburgh Medical and Surgical Journal*, which came into existence successively in 1781, 1794, 1799 and 1805. The exception I allude to is the case by Mr. Simmons, published in the *Medical and Physical Journal* for 1803, and as the quantity of pus immediately discharged on opening the abscess was most unusually great, the case seems worth mentioning. To use the words of Mr. Simmons:—"The enlargement of the belly was chiefly confined to the right side, though latterly it had spread a good way, and in every part a deep-seated fluctuation was distinctly perceptible." He afterwards says:—"Lest a spontaneous rupture might occur, and the matter escape into the abdominal cavity, it was advised in consultation to make an opening without delay." The mode of operating is next described, and Mr. Simmons then proceeds:—"The matter streamed out very copiously: not less than a gallon was caught in a large wash-hand basin, and at least two quarts more were spilt upon the floor of the operation room." Thus twelve pints escaped, and it is added that the patient perfectly recovered.

The subject was again briefly alluded to by Sir John Pringle, in his work on the diseases of the army, published in 1810. He merely says, however—"I have only known one case cured after an abscess formed. In this, the matter pointing, was let out, and the patient recovered." He also mentions one case in which an operation proved unsuccessful. On this he remarks:

* *Treatise on the Diseases of the Liver*, by William Saunders, M.D., p. 224.

"The operation, having been delayed, perhaps, too long, he died soon after."* After an interval of eleven years, we have another brief allusion to the subject by Staff Surgeon Marshall, who says he performed the operation three times on natives of Ceylon, and in each case with success. He also says: "Some cases of abscess of the liver occurred in Kandy, where, in consequence of a bulging under the false ribs of the right side, it was supposed that a considerable adhesion had taken place between the liver and the parietes of the abdomen. Dissection after death, however, showed in each case, that the connection was not sufficiently intimate to render an operation successful."†

These several notices of the subject, however, are both brief and unsatisfactory; yet, during the long course of years over which they extended, various works on the diseases of tropical climates and of the liver, successively appeared, by Pearson, Mosely, Chisholm, Faithhorn, Ayre, and others, but contained no allusion to the subject.‡ We then come down to the more recent days of Dr. James Johnson, but the earlier edition of his work on tropical climates, published some thirty years ago, is equally silent. Even in the memoir on abscess in the liver by M. Louis, published soon afterwards, although he gives details of fatal cases of abscess, there is no allusion to the subject of opening them. The same remark equally applies to M. Andral's *Clinique Medicale*. He gives particulars of six fatal cases of hepatic abscess, but is silent on the subject of operation. I have thus purposely alluded to this state of the medical literature of the day, as affording strong negative proof of the very slight attention which the subject, up to that time, had excited.

At length, however, the time arrived when the subject began to receive that close attention which its importance demanded;

* *Observations on the Diseases of the Army*, by Sir John Pringle, Bart., p. 146.

† *Notes on the Medical Topography of Ceylon*, by Henry Marshall, Surgeon to the Forces, p. 150.

‡ Yet Mr. Faithhorn says:—"The vast number of cases which have fallen under my care in various parts of India render me familiar with the disease (hepatitis) in every form."—*Facts and Observations on Liver Complaints*, by John Faithhorn, formerly Surgeon in the H. C. Service, p. 39.

and in the elaborate work published in 1828,*—which reflected so much credit on the medical service of Madras,—Mr. Annesley entered largely into the question, and treated it, for the first time, on sound pathological principles. He describes minutely the precise state of parts, locally, which, in his opinion, alone justified an operation. He says :—" As soon as the abscess has advanced to that state, in process of pointing externally, which shall offer a fair prospect of advantage, from giving an artificial exit to the collected matter, the operation for this purpose should not be delayed. But it ought not to be undertaken precipitately, and before the purulent formation has made its way sufficiently near to the external surface of the organ, or before the part at which it points has formed adhesions to the opposite part of the abdominal parietes. The practitioner should also be fully convinced, from the state of the tumour in the hepatic region, and from the history of the case, that abscess actually exists, and that the tumour does not proceed from an excessive accumulation of bile in the gall-bladder." Events have proved that this warning by Mr. Annesley against mistaking an enlargement of the gall-bladder for an abscess in the liver was neither ill-timed nor superfluous, for we know that men like M. Dupuytren, Mr. Todd, and Dr. Graves, committed this very error in diagnosis, and, believing they were dealing with abscess of the liver, were surprised, on making an incision, to see bile flow instead of pus.†

* *Researches into the Causes, Nature and Treatment of the Diseases of India.* By James Annesley, Esq., of the Madras Medical establishment.

† *Dublin Hospital Reports* for 1830, vol. v. p. 104. In Dr. Graves' case there was abscess in the liver as well as enlargement of the gall-bladder. Van Swieten, too, mentions a case, which occurred in a woman who had long suffered from pain in the right hypochondrium, in which there was a " tumour, extending from the lower margin of the false ribs down to the spine of the ilium," and which he suspected to be owing to an abscess in the liver. The post-mortem examination, however, showed that the tumour was an enlargement of the gall-bladder, distended with fluid. He also mentions that the celebrated Petit, after a consultation with other medical men, who were unanimously of opinion that a certain abdominal tumour was owing to an abscess in the liver, made an incision through the integuments, intending to open the supposed abscess, but happily discovered the incorrectness of the diagnosis before doing so. It proved to be an enlarged gall-bladder. *Commentaries upon Boerhaave's Aphorisms,* by Baron Van Swieten, vol. ix. p. 194.

Mr. Annesley further says :—"As long as pain and tenderness are felt in the region of the liver, with an undefined tumefaction, and neither a circumscribed nor soft fluctuating tumour is yet formed, an operation, undertaken with the view of giving exit to the purulent matter, would be premature. But when the pain and general fulness are diminished, and replaced by a distinct tumour, without acute pain, soft and fluctuating at its apex, or with a soft elasticity and slight lividity or redness of the surface, and somewhat hardened and elevated base, indicating that the purulent matter has found its way to the external covering of the liver at the tumid part, and that the liver has there formed adhesions to the opposite part of the abdominal parietes,—the operation may be undertaken with every expectation of success."

In opening an abscess, Mr. Annesley objected to the use of a trochar, for the following reason :—"The pus which is formed in abscess of the liver is often full of large flakes, and sometimes contains large coagulated clots of a cheese or curd-like matter, which will not pass through the largest trochar, the more fluid portions only coming away. These clots remain, acting as foreign substances in promoting continued suppuration of the organ, and febrile excitement of the system." He then adds: "We, therefore, have been always in the habit of performing the operation without the trochar, and in the following manner :—'Having made the external incision large, and with caution, until the peritoneum is fully exposed, the fluctuation of the abscess will be distinctly felt. An abscess-lancet should then be introduced, and the tumour laid open to the full extent of the external wound, which ought to be from two and a half to three inches in length.'"

Mr. Annesley gives details of five cases thus treated.* Two proved successful, and three fatal. The first occurred in 1817; the last in 1823. In four of these, there was marked prominence and "evident fluctuation," before an opening was made. In the fifth case, the fluctuation was "obscure."

Annesley's work was soon after followed by Twining's, but on

* Vol. i. p. 656.

this subject he is almost silent. He merely observes:—"I have as yet seen only one case in which abscess of the liver was opened by an incision. In that case the opening was made near the epigastrium. The patient recovered, and lived by no means a temperate life afterwards."* Mr. Conwell, of the Madras Service, writing a year or two later, and detailing a large number of cases of hepatic abscess, only mentions one in which an abscess was opened by incision. It proved fatal.†

Annesley was the earliest writer who pointed out forcibly and fully the danger of resorting to an operation before adhesion had taken place between the opposite surfaces of the hepatic and parietal peritoneum, and who at the same time described clearly the precise local condition which alone proved the existence of this adhesion. In each case, previous to operating, he thus effectually guarded against the possibility of the contents of the abscess escaping into the peritoneal cavity. Up to this point no statement could be either more distinct or more valuable; but here he leaves us. He does not say what is to be done in those cases in which the symptoms unequivocally prove the existence of an abscess, but in which this adhesion has not taken place. A case of this kind, however, occurred in Dublin, which led, under such circumstances, to a modification of Annesley's mode of procedure. I allude to Dr. Graves' case,—one we are all acquainted with, but which it may be well to glance at. Dr. Graves, in detailing it,‡ commences by saying—"Let me call your attention to a case of inflammation of the liver terminating in abscess, and to the mode which I was the first to point out of opening abscesses in that organ." His patient was admitted into the Meath hospital with hepatitis, terminating unequivocally in the formation of an abscess, but it showed no disposition to point, and the integuments preserved their natural colour. The

* *Clinical Illustrations of the more important Diseases of Bengal*, by William Twining, p. 200.

† *Treatise on Hepatic Disease in India*, by W. E. Conwell, Surgeon, of the Madras Establishment, p. 522.

‡ *Clinical Lectures on the Practice of Medicine*, by R. J. Graves, M.D., 2nd edition, vol. ii. p. 248.

man's constitution giving way, it became a question whether the abscess should be opened. To the performance of an operation, it was objected that the external tumour was diffused, and the situation of the abscess, in consequence, uncertain, so that an operation afforded but little chance of giving exit to the matter ; while, if it failed, it might, for obvious reasons, prove very detrimental. Any attempt to open the abscess was, therefore, disapproved of by the Surgeons of the hospital. " Under these embarrassing circumstances, it occurred to me," says Dr. Graves, " that I had seen several cases where an incision made over a deep-seated abscess had failed, from its deep situation, to give vent to the matter in the first instance, and yet, in the course of a few days, the abscess found its way to the incision, and burst through it, a process explicable partly by the removal of pressure, and partly by the inflammation arising from the incision, and which served to form a connexion between it and the abscess. On these grounds, I proposed that an incision about four inches long should be made exactly over the centre of the tumour in the right hypochondrium, that it should be carried through a considerable depth of muscles, and, if possible, be continued to within about one or two lines of the peritoneum. This incision was to be plugged at its bottom with lint, and thus kept open, in the hopes that the hepatic abscess might, for the reasons above mentioned, tend towards, and finally burst through it. The operation was performed by my colleague Mr. MacNamara. The abdominal muscles were found of considerable thickness and quite healthy, and although the incision was very deep, yet the situation of the hepatic abscess was not felt more distinctly, so that it now became quite evident that no prudent surgeon would have persevered in an attempt to open directly into it. I now waited for the result with much anxiety. In two days after, the patient sneezed, and purulent matter in very large quantity burst forth through the wound. On examination, it appeared that the incision had not been exactly over the abscess in the liver, for the matter did not come from the bottom, but from one side of the wound, and pressure on the liver to that side caused matter to flow in abundantly. The communication

between the wound and the abscess was not therefore directly inwards, but somewhat laterally. If, then, we had attempted to open the abscess directly, we should have failed, and the consequences of such an attempt might have been fatal. Purulent matter, at first in large and afterwards in diminished quantity, flowed through the wound for several weeks, and the man perfectly recovered."

The method of proceeding thus introduced by Dr. Graves, has, I believe, been often followed in this country, in those cases in which there was no proof of adhesion, but I am not aware whether the Society are in possession of any statistics on the result, as far as this Presidency is concerned.

No important modification* on these operations of Mr. Annesley and Dr. Graves was made, I believe, till about fifteen years ago, when, under the direct encouragement of a man of high rank and high character,—the late Dr. Murray, H. M. Deputy Inspector of Hospitals at Madras,—the practice was introduced, in cases of "suspected abscess," of "exploring," by the introduction of a trochar into the liver, without the least reference to the circumstance of adhesion having taking place between the opposite surfaces of the peritoneum; and cases are recorded which show that recovery sometimes took place. In some cases we read of the exploring instrument being passed two, three, or more times in the same case. In one case treated in this way, and followed by death, three separate abscesses were found on examination. The exploring instrument had been introduced three times, and on one occasion an abscess had been opened. In his remarks on the history of the case, Dr. Murray implied that he had not been sufficiently active, for he

* I of course do not include among the "important" modifications, the different methods adopted by different men of opening an abscess which distinctly proved its existence by the fact of evident fluctuation; one, for instance, by the use of a trochar; another by the use of caustic potash; a third by the insertion of a seton; a fourth by the use of a lancet, when the abscess was sufficiently near the surface to render a previous incision through the integuments and muscular structure unnecessary, and such like minor modifications.

says,—"after having seen this dissection, I would hereafter explore to a greater extent in any analogous case."*

The practice thus introduced, and which at one time was characterized as a "most important improvement in the treatment of hepatic abscess," was followed to a considerable extent, more particularly at Madras. What encouragement it received in this Presidency I am not aware. It is evident, however, that the men who thus practised were regardless of the bad effects likely to result from wounding an important viscus, and it is equally evident, that in their anxiety to relieve the system from the danger consequent upon the existence of an abscess, they lost sight of the far greater danger likely to arise from the escape of its contents into the peritoneal cavity. Yet this result, under such circumstances, might naturally have been expected. Mr. Annesley, too, had previously given due warning of the danger of operating where adhesion had not taken place between the hepatic and parietal peritoneum. He had also stated that he had seen several instances where premature operations would have been attempted had they not been prevented, and that he feared some had actually been performed.† Cases, too, are on record, in which, though there was even distinct fluctuation, the *post-mortem* examination proved that no adhesion had taken place. The late Dr. Malcolmson, of the Madras Service, has recorded two such cases. In one, an operation was performed in the manner recommended by Dr. Graves; in the other, no operation was resorted to, but this was chiefly in consequence of the hopeless condition of the patient.‡

* *Madras Quarterly Medical Journal*, vol. ii. and *Medico-Chirurgical Review* for July 1845.

† I refer to Mr. Annesley so often, because, although most modern authors on medicine allude more or less to the subject, it is evident that they mainly base their remarks on Annesley's experience and statements. He has clearly been regarded as a great authority on diseases of the liver. In proof of this, I would point to Dr. Copeland's admirable article on this subject in his *Dictionary of Practical Medicine*, to the corresponding article by Dr. Thompson in the 4th volume of the *Library of Medicine*, and more especially to the able work on the diseases of the liver by Dr. Budd, who repeatedly refers, in it, to what he justly characterizes as "Annesley's splendid work."

‡ *Medico-Chirurgical Review* for July 1838.

We have, moreover, an instance in the fatal case recorded by Mr. Conwell, which I just now alluded to, of the contents of an abscess escaping into the peritoneal cavity, when opened before adhesion had taken place. His statement is certainly not so clear or distinct as could be wished, but no other conclusion can be drawn. Mr. Conwell says: "The tumour being more elevated, and its parietes thinner, an operation was determined on. A small incision was made, which gave exit to four ounces and a half of fluid of a brick-dust colour, with small but distinct traces of flaky pus. *Membranes protruded, which we correctly supposed to be the peritoneal coat.*" This seems to prove that adhesion between the opposite surfaces had not taken place. The man died. Two abscesses were found on examination. In a minute account of the inspection, Mr. Conwell says—"The sanies, pus, &c. had only in part escaped into the general cavity. The entero-peritoneal coat had its vessels gorged." Mr. Conwell then expresses his regret that the operation recommended by Dr. Graves had not been performed.

Of late years there have been occasional notices of the subject in most of the medical periodicals, but it seems strange that so valuable a publication as the *Transactions of the Medical and Physical Society of Calcutta* should have added so very little to our stock of knowledge on these points. Commencing in 1825 and terminating with 1838, only three numbers contain any allusion to the subject. In the volume for 1831, one fatal case is alone recorded; in that for 1836, one successful and one fatal case, the latter having been treated by the insertion of a caustic issue; and in the volume for 1833 a fatal case is mentioned in a valuable paper by Dr. Geddes, the ground-work of his later and still more valuable work on the diseases of India.

I have thus taken a brief glance at some of the principal contributions to medical literature on the subject in question for many years past, and in doing so have dwelt on the more important opinions which have been entertained, as well as on the chief modifications of practice which have been successively introduced. My apology for going over such a well-trodden field must be the importance of the subject, and the hope that by bringing

it prominently before the Society in its different bearings, some practical conclusions may be arrived at. It is true that some men question the advisability of opening hepatic abscesses under any circumstances. Others, again, would only do so in very particular cases, and with the utmost caution. It must also be admitted that recent authors, of the reputation of Dr. Watson and Dr. Budd, give but faint encouragement for adopting such a step; still, I cannot but think that the large majority of our members would consider it sound practice to resort to this measure in all cases in which there might be distinct fluctuation, and in which also a circumscribed œdema and slight redness of the skin clearly proved that adhesive inflammation had produced union between the abscess and the abdominal parietes; and in such cases it seems evident that the sooner the abscess is opened, the greater would be the probability of recovery. It is well remarked by Dr. Macgregor, of the Bengal Service, that "though puncturing may remove pus thus formed, still the operation must be had recourse to early, before the strength is materially reduced and the powers of life sunk."* And Dr. Clark, in his statement of the cases which I just now referred to, attributes the want of success in those which proved fatal to the "operation having been too long delayed."†

A graver and more difficult question, however, arises, with regard to the proper course to be pursued in those cases in which the symptoms prove unequivocally the existence of an abscess,—in which there may even be a circumscribed tumour, with a somewhat hardened base, and a distinctly fluctuating apex,—but in which there is an absence of that circumscribed œdema, with slight redness of the surface, which can alone be depended on as proof of adhesion having taken place. In such a case what treatment should be adopted? How long are we to pursue the expectant system in hopes that nature will cause adhesion, unassisted by ourselves? or at what precise moment would it be considered sound practice to endeavour to produce

* *Practical Observations on the Principal Diseases in the North-Western Provinces in India*, by W. L. Macgregor, M.D., p. 120.

† *Medical Commentaries* for 1789, p. 318.

adhesion by exciting the necessary amount of inflammation in the manner recommended by Dr. Graves, or in some other way, as by the insertion of a seton ?

But a still graver and still more difficult question next presents itself. Hitherto I have assumed the existence of an abscess to be unequivocally proved by the symptoms. I now come to a case involved in some obscurity. Suppose, for instance, the symptoms in any particular case should excite strong suspicion of the existence of an abscess, but the tumefaction should be diffused instead of circumscribed, and there should be a total absence of fluctuation; suppose this state continued for some little time, and was even attended by febrile accessions, night-sweats, and increasing depression of the powers of life, yet no change took place in the local condition. In such a case, should anything be done in the way of operation? Would it be advisable, for instance, to make an incision through the integuments and muscular structure to within a line or two of the peritoneum over the centre of the diffused swelling, with the view of exciting inflammation and consequent adhesion, and at the same time of removing pressure, and thus of assisting the supposed abscess to approach the surface? If such a step *be* advisable, what would be the most favourable moment for resorting to it?

There is still one more question I would put,—and as it involves the consideration of a most important point in practice, I would venture to suggest that it should be finally set at rest, as far as this Presidency is concerned, by the deliberately recorded opinion of the Society; it is this: Is there any conceivable case, in which, in the opinion of the Society, it would be justifiable to resort to Dr. Murray's practice of exploring? I make use of the word *conceivable*, because it implies that such a case must be exceedingly rare, if not altogether impossible; and I think no member of the Society would venture to adopt a practice which has been disapproved of by many able and experienced men, without the utmost consideration. For my own part, I must confess I cannot conceive the existence of any case which could require, or even justify, the adoption of such a measure.

NOTES

ON

PERICARDITIS, ENDOCARDITIS, AND ORGANIC DISEASE OF THE HEART AND AORTA, AS OBSERVED CHIEFLY IN THE CLINICAL WARD OF THE JAMSETJEE JEEJEEBHOY HOSPITAL, AT BOMBAY.

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Presented November 1852.

THESE notes refer to forty-nine cases of affection of the heart and aorta, observed by me during a period of four years, in natives of Bombay, chiefly in the clinical ward of the hospital. They have been arranged in two parts. The first relates to twenty-five cases of pericarditis and endocarditis; the second to twenty-four cases of structural disease of the heart and aorta.

In submitting this report to the Society, I have had two objects mainly in view,—one, to add to our clinical knowledge of an important class of disease, the other to correct the erroneous* impression which seems to exist, that acute rheumatism in India is rarely associated with pericarditis or endocarditis.

* Dr. Bird, lately Physician General of this Presidency, in the *Lancet* of the 10th August 1850, and Dr. Norman Chevers, in his treatise on the management of diseases of the heart, published in Calcutta in 1851, entertain this impression. I would venture to suggest that we do not as yet possess the data which can justify a comparison between the pathology of the diseases of the natives of India and that of the diseases of the natives of European countries. Our present precise and extensive pathological information relative to the diseases of Europe has been chiefly derived during the last thirty years from observations made among the varied inmates of the large civil hospitals in the cities of Europe. Hospitals for the

The relation of the heart affection to previously existing rheumatism is apparent in twenty-seven of the forty-nine cases detailed in these notes. In all probability it would have been evident in a still greater number, had the record of all the cases been equally complete.

When we compare the admissions under the head of rheumatism into our Indian hospitals with those that take place into the hospitals in Europe, we may expect to find in the former a smaller proportion of affections of the heart. The explanation, however, is sufficiently simple: in the greater number of cases of rheumatism treated in hospitals in India, the disease is chronic; it is unattended with swelling of the joints and febrile disturbance, and occurs for the most part in natives more or less cachectic from the influence of malaria, syphilis, scurvy, mercury, imperfect means of subsistence, &c. It is not, I need hardly observe, in association with such a form of disease that pericarditis and endocarditis have been so frequently found in European countries.

It may be that in India acute articular rheumatism is not so common as in colder climates, yet it is by no means of infrequent occurrence; and the association of pericarditis or endocarditis with it is, I believe, as common in the one country as in the other.

Of no rule in practice am I more thoroughly satisfied than that it is as incumbent on the practitioner in India as in Europe carefully to watch and search for the physical signs of pericar-

reception of the same classes of the natives of India are only beginning to be established. That in which the present observations have been made is, I believe, considerably the largest in India, and has only existed on its present scale (300 beds) for about seven years.

From the inquiries already made in it, it appears that Bright's disease of the kidney is fully as common as in European hospitals, and that pericarditis and endocarditis, with consequent organic heart disease, are as common accompaniments and results of acute rheumatism in Bombay as in Europe. I hope, moreover, shortly to show, that pneumonia is a far more common disease in the hospital-frequenting classes of the natives of Bombay than hepatitis; that phthisis pulmonalis is very common, and that the impression sometimes given to English students of medicine of the inutility of the stethoscope in India is very inconsistent with fact.

ditis and endocarditis in every case of acute rheumatism. If this rule be neglected, the co-existence of these diseases in India will necessarily continue to be looked upon as of rare occurrence.

PART I.

ON PERICARDITIS AND ENDOCARDITIS.

The first part of this Report consists of the history of twenty-five cases of pericarditis and endocarditis, preceded by a statement of the important facts that may be deduced from them, arranged under the following heads:—

I. The proportion of cases of Pericarditis and Endocarditis, and of both combined.
II. The result of the cases.
III. Relation to difference of Sex.
IV. The proportion of cases in the different Castes.
V. Classification, with reference to age.
VI. The different occupations of those affected.
VII. Relation to habits of life.
VIII. The months of the year in which most prevalent.
IX. Relation of the disease to Rheumatism, Cachexia, and Pulmonary inflammation.
X. The leading symptoms and signs observed, treated of under the following sub-divisions:—
    1. Pain at the margin of the left ribs.
    2. Pain at the præcordial region.
    3. Increased action of the heart.
    4. The state of the pulse.
    5. The absence or presence of fever.
    6. Difficulty of breathing.
    7. Anxiety of countenance.
    8. Occurrence of delirium.
    9. Increased præcordial dulness.
    10. Purring tremor.
    11. Præcordial fulness.
    12. Friction sound.
    13. Jogging movement of heart.

XI. On the treatment of the disease :

1. Blood-letting, general and local.
2. The application of blisters.
3. Mercurial influence.

I.

The Proportion of Cases of Pericarditis and Endocarditis, and of both combined.

Thirteen* of the cases would seem to have been of pericarditis alone, but in regard to six† of them, the details are not sufficiently stated to justify the exclusion of co-existing endocarditis. They must, therefore, be regarded as doubtful cases, though the probability is in favour of their having been pericarditis alone.

There are four cases of endocarditis alone: of these, the mitral valve was affected in three,‡ and the tricuspid valve was believed to be so in one.§

There are eight cases of pericarditis and endocarditis combined: in three‖ the aortic valves, in four¶ the mitral valve, and in one** both aortic and mitral valves were affected. In seven of the cases, the pericarditis took precedence of the endocarditis—in the remaining case the endocarditis was first observed.

II.

The Result of the Cases.

Nine†† of the twenty-five cases proved fatal. Of these eight‡‡ are in the list of pericarditis, but five of them are classed with those in which the co-existence of endocarditis was not disproved ; one§§ is in the list of pericarditis and endocarditis combined ; two‖‖ of the fatal cases occurred in association

* Cases 2,* 3, 4, 9,* 10, 14, 18,* 19,* 20,* 21,* 22, 24, 25.

† These cases are marked in the above note by an asterisk.

‡ Cases 8, 12, 16. § Case 11. ‖ Cases 5, 7, 17.

¶ Cases 6, 13, 15, 23. ** Case 1.

†† Case 10 is excluded, because death took place long afterwards from cholera.

‡‡ Cases 2, 9, 18, 19, 20, 22, 24, 25. §§ Case 23. ‖‖ Cases 2, 9.

with rheumatism; two* were present in individuals of very cachectic habit; four† were instances of pericarditis secondary on pneumonia, pleuritis, and phthisis pulmonalis.

Of these last four fatal cases, in two‡ death took place from pulmonic disease. In the first the pericarditic inflammation had terminated in adhesions, in the second in opaque patches on the surface of the heart, and the endocarditis in valvular disease.

It will subsequently appear, that of the twenty-five cases, seventeen were in association with rheumatism, two with cachexia; four were secondary on pulmonic disease, and two primary or idiopathic. It has just been stated, that of the rheumatic cases two were fatal, of the cachectic all, of the pulmonic§ two, and of the primary one. It is, therefore, a deduction from these cases, that in pericarditis associated with rheumatism, the prognosis is much more favourable than under the other circumstances in which this disease arises.

Of the sixteen cases in which a fatal result did not take place, in five‖ no signs of cardiac disease were left behind, and recovery was regarded as complete. They were, with one¶ exception, cases of pericarditis; in the exceptional case endocarditis was also present. In three cases** the signs of valvular disease were so slight, that it is very probable that they also should be included in the list of ultimate complete recoveries.

Of the eight cases in which complete recovery did not take place, in one†† valvular disease was left, in six‡‡ valvular disease and pericardial adhesions, in one pericardial adhesions alone. The adhesions were in six inferred to exist from the severity of the symptoms, and the distinctness and duration of the physical signs; in one§§ there was greater certainty, in consequence of the well marked and persistent jogging motion of the heart which remained behind.

* Cases 18, 19. † Cases 20, 22, 23, 24. ‡ Cases 22, 23.

§ The two in which death took place from pulmonic disease long after the pericarditis are excluded.

‖ Cases 3, 4, 5, 10, 21. ¶ Case 5. ** Cases 8, 12, 16.

†† Case 11. ‡‡ Cases 1, 6, 7, 13, 15, 17. §§ Case 14.

III.

Relation to difference of Sex.

Of the cases under examination, four* were females, but only three of these were hospital patients. Of the four, too were Hindoos and two Parsees. These data are much two limited to justify any attempt at precise comparison of the frequency of the disease in the two sexes. So far as they go, they show as great a prevalence in females as in males. The proportion of total female admissions into hospital during the four years over which these cases extend was about 1 to 7 males, and there is nearly the same proportion in the admissions from pericarditis and endocarditis. Moreover, as the clinical ward is for males only, I am satisfied, that in regard to the female inmates, there has not been the same care in looking for the disease.

IV.

The Proportion of Cases in the different Castes.

The castes of twenty-three of the cases only is stated, but from these I shall exclude the female cases, so as to admit of a more accurate comparison between the affected and the total hospital admissions of the different castes. The classification of the females according to caste has not been attended to in the hospital returns of disease. There are, therefore, nineteen cases to be considered, under this head: of these, nine,† nearly one-half, are Hindoos. The proportion that the Hindoo male hospital‡ admissions during the four years bears to the

* Cases 2, 14, 15, 25. † Cases 4, 5, 6, 10, 11, 12, 17, 21, 22.

‡ *Total Number of Hospital Admissions from April* 1848 *to April* 1852.

	Males.	Females.	Total.	Hindoos.	Mussulmans.	Christians.	Parsees.	Females.	Total.
1848-49.....	3,045	487	3,532	1,154	1,064	682	145	487	3,532
1849-50.....	3,653	589	4,242	1,335	1,377	681	260	589	4,242
1850-51.....	4,133	713	4,846	1,712	1,347	715	359	713	4,846
1851-52.....	3,543	583	4,126	1,486	1,064	629	364	583	4,126
Total....	14,374	2,372	16,746	5,687	4,852	2,707	1,128	2,372	16,746

total male admissions is not quite one-half. There are four* cases of Parsees, nearly one-fifth of the affected, but the proportion of the total male Parsee hospital admissions is about one-twelfth. There are four† cases that are classed under the head Christians in the hospital returns, viz. three Portuguese and one European. The proportion of total hospital Christian admissions is about one-fifth.

There are two‡ cases of Mussulmans, being one-ninth and a half of the affected, whereas the proportion of Mussulman hospital admissions is rather more than one-third.

From these data, then, it would seem that there is about an equal liability to pericarditis and endocarditis in the Hindoo and Native Christian populations, but that, compared with them, these affections are more than twice as common among Parsees, and not one-fourth so prevalent among Mussulmans. It will not fail to be observed that of the four female cases, two were also Parsees, making six Parsees affected, out of a total of twenty-three. Under a subsequent head it will appear that all the cases which occurred in Parsees were in association with acute articular rheumatism. These facts confirm the general impression on my mind, that acute articular rheumatism, with pericarditis and endocarditis, is more common among Parsees than any of the other classes of the native community of Bombay. Of the comparative exemption of the Mussulman population, as shown by these statements, I am unable to suggest any explanation ; and it would be waste of time, and might lead to error, were I to speculate on the deductions from so limited a series of data.

V.

Classification with reference to Age.

The ages of only 23 of the cases are recorded :

From	10	to	20	.....	7 §
„	21	„	30	.....	10 ‖

* Cases 7, 8, 9, 13. † Cases 1, 16, 23, 24. ‡ Cases 3, 18.

§ Cases 1, 2, 5, 7, 12, 16, 17. ‖ Cases 3, 4, 6, 8, 9, 10, 11, 13, 21, 25.

From 31 to 40	.....	4 *
„ 41 „ 50	.....	2 †
		23

The lowest age is 17, and the highest 50; it therefore appears, that seventeen of the cases were between the ages of 17 and 30, four between 31 and 40, and two between 41 and 50: of those between 17 and 30, fourteen occurred in association with rheumatism,—a fact which goes to confirm the common statement that rheumatism, with pericarditis and endocarditis, is a disease rather of the earlier than the advanced periods of life.

VI.

The different Occupations of those affected.

Of five cases, including three females, the nature of the occupation is not stated. That of the remaining twenty was as follows:—

	Cases.		Cases.
2 Sailors	1, 2	1 Labourer.....	5
3 Servants	8, 9, 23	1 Carpenter	7
3 Fruit, Vegetable, and Fish Hawkers	6, 10, 13	1 Grain Seller	12
		1 School Master....	16
2 Beggars.....	11, 25	1 Oil Seller	17
2 Sepoys	6, 21	1 Dyer	18
1 Baker	22	1 Cook	24

On examining this statement, it appears that of the twenty cases, sixteen followed occupations which, more or less, led to exposure of the individuuls following them to wet, or vicissitudes of temperature. This is the case of sailors, hawkers of fruit, &c., beggars, sepoys, bakers, cooks, dyers, and labourers.

VII.

Relation to habits of life.

It is stated of only five of the twenty-five cases, that they were addicted to the use of spirituous liquors: of these two were Parsees, two Hindoos, and one a Portuguese; one patient was addicted to the habit of opium-smoking.

* Cases 15, 22, 23, 24. † Cases 14, 18.

In regard to the remaining nineteen cases, it may be inferred of the greater number that they were not of intemperate habits.

VIII.

The Months of the Year in which most prevalent.

The admissions occurred in the following months:—

	Cases.		Cases.
3 January	4, 5, 6	3 July.....	1, 23, 24
2 February.....	7, 16	3 August.....	9, 15, 25
March.....	....	1 September ..	22
1 April	14	4 October.....	2, 3, 12, 13
May.....	....	2 November....	18, 21
4 June.....	8, 9, 10, 17	2 December....	19, 20

The relation of the disease to cold and wet is also very well shown in this statement. There are nine cases in the cold months of November, December, January, and February. Those of February were admitted in its first half—one had been ill fifteen days, the other eight days: they are, therefore, justly classed with the occurrences of the cold season. There are fifteen cases in the rainy season, in the months of June, July, August, September, and October. Of the four cases which occurred in June, three were admitted after the 20th, and are consequently correctly classed as admissions of the rainy season; and in two the relation to wet as a cause is distinctly recorded in the case. Of the four cases in October, three are correctly classed as admissions of the rainy season: they were received into hospital before the 12th of the month, and two of them had been ill 15 and 10 days respectively. The fourth admission in October was of a very susceptible individual, who had on a former occasion suffered from rheumatism.

The single case which occurred in the hot season, in the month of April, was a Parsee female in good circumstances, but who on previous occasions had been the subject of rheumatism.

IX.

Relation of the Disease to Rheumatism, Cachexia, and Pulmonic Inflammation.

In the seventeen first cases the disease was associated with acute articular rheumatism. In sixteen the rheumatism was

present at the period when the heart symptoms appeared, and afterwards co-existed with them. In one* case the rheumatic symptoms were not present with the cardiac symptoms, which occurred in an individual who had some years previously suffered from an attack of acute rheumatism, and in whom the diathesis, at the period of the attack of pericarditis, may be assumed to have been present. Of these seventeen cases, 8 were Hindoos, 6 Parsees, 2 Christians, and 1 a Mussulman. Of the seventeen cases, six† were of pericarditis alone, four‡ of endocarditis, and seven§ of pericarditis and endocarditis combined.

Of the remaining eight cases, in which rheumatism was not present, two‖ occurred in very cachectic states of the system: in one the cachexia was distinctly syphilitic—in both, pericarditis alone was present; four¶ were extension of inflammatory action from the lungs or pleura, and were with one** exception cases of pericarditis. In the exceptional case, endocarditis also existed. Two†† must be looked upon as instances of primary pericarditis.

Of the total cases of pericarditis and endocarditis there was only one in which, so far as the record shows, there was present Bright's disease of the kidney. In the thirty-one cases of Bright's disease detailed by me in the 10th Number of the Society's Transactions, there were only two in which affection of the heart co-existed with the kidney disease. These data, then, do not show the same relation between Bright's disease of the kidney and pericarditis and endocarditis, as the statements of other observers do.

We notice distinctly in these cases the greater relation that subsists between endocarditis and acute articular rheumatism, than between pericarditis alone and rheumatism. All the cases of endocarditis, single or combined, were, with one‡‡ exception, associated with rheumatism, whereas of the thirteen cases of pericarditis, seven were unconnected with rheumatism; and of the six cases in the list of uncombined pericarditis noted as

* Case 10. † Cases 2, 3, 4, 9, 10, 14. ‡ Cases 8, 11, 12, 16.
§ Cases 1, 5, 6, 7, 13, 15, 17. ‖ Cases 18, 20. ¶ Cases 19, 22, 23, 24.
** Case 24. †† Cases 21, 25. ‡‡ Case 23.

occurring in association with rheumatism, it is not improbable that in two* of them endocarditis was also present. Of the two cases of apparent primary pericarditis, one† is peculiar in its nature, and is made the subject of comment in the remarks that follow its statement.

X.

The leading Symptoms and Signs observed.

In analyzing the symptoms, attention must be confined to twenty-two cases; for of three‡ the record is so incomplete as to render their exclusion necessary.

Pain at the margin of the left Ribs was present in seven§ cases, in some extending to the præcordial region; in two or three to the epigastrium and abdomen generally.

Præcordial pain, either alone, or associated with pain at the margin of the left ribs, existed in eight‖ cases.

To consider this symptom from another point of view, pain (præcordial and hypochondriac) was observed in ten cases; in two¶ it was confined to the margin of the left false ribs; in three** to the præcordial region; and in five†† the pain was common to both situations.

Of the ten cases in which pain was present as a symptom, six were of pericarditis alone, thus leaving four‡‡ of this form in which pain was not observed; two were of endocarditis, leaving two of this form in which pain was not present; and two were of pericarditis and endocarditis combined, leaving six of this form not characterized by pain.

From these cases, then, it appears that we are justified in relating the symptom pain more to pericarditis than to endocarditis; for of the eighteen cases of pericarditis, simple and combined, pain was present in eight; but of the twelve cases of endocarditis, simple or combined, pain was characteristic of only four. These cases also confirm the now generally admitted fact,

* Cases 2, 9. † Case 25. ‡ Cases 18, 19, 20.
§ Cases 2, 3, 4, 5, 10, 16, 21. ‖ Cases 1, 3, 5, 8, 9, 10, 16, 21.
¶ Cases 2, 4. ** Cases 1, 8, 9. †† Cases 3, 5, 10, 16, 21.
‡‡ As already stated, three of the cases of pericarditis (18, 19, 20,) are excluded from consideration under this head.

that a considerable proportion of cases of pericarditis and endocarditis present themselves, in which pain is not complained of. Of the twenty-two cases now under review, pain was a symptom of ten; in twelve it was absent.

Increased action of the Heart is noted as having been present in eight cases. In five* of these pericarditis and endocarditis were combined; in two† endocarditis, and in one‡ pericarditis existed alone: thus, then, there would seem to be a more frequent relation between increased action of the heart and endocarditis than between it and pericarditis. Of the twelve cases in which endocarditis, simple and combined, was present, palpitation existed in five; but of the ten cases in which there was pericarditis alone, palpitation is noted of only one. It is further evident from this statement, that in a large proportion of cases of pericarditis and endocarditis, the disease exists without notable increased action of the heart. Of the twenty-two cases under review, of eight only is palpitation recorded as a symptom.

Impulse remote.—In one§ of these cases only is the impulse of the heart stated to have seemed distant and obscure.

The state of the Pulse.—In sixteen cases the character of the pulse differed notably from the healthy standard. In four it was *jerking*; of these, three‖ were of pericarditis and endocarditis combined, and one¶ of pericarditis alone. As the jerking pulse is not noted of any case of simple endocarditis, it may probably be inferred that this character of pulse is more related to pericarditis than endocarditis. It occurred only in simple or combined pericarditis.

In eleven cases the pulse is noted as *small*, and in some of them it was also sharpish: six** of these cases were of pericarditis, three†† were of endocarditis, and two‡‡ of pericarditis and endocarditis combined. It may, therefore, be inferred, that the character of smallness of the pulse is probably as frequently related to endocarditis as to pericarditis.

* Cases 6, 7, 13, 15, 17. † Cases 8, 16. ‡ Case 25.
§ Case 3. ‖ Cases 1, 7, 13. ¶ Case 23.
** Cases 2, 3, 4, 10, 21, 25. †† Cases 8, 11, 12. ‡‡ Cases 15, 17.

In only one* case is the pulse stated to have *intermitted*, and this feature was not observed till long after the acute symptoms of pericarditis had ceased, and the disease was believed to have terminated in adhesions.

From a consideration of these cases, then, we may infer that an altered state of the pulse is more frequently observed in pericarditis and endocarditis than pain or palpitation; that the most common quality of the pulse is smallness, associated with occasional sharpness, then a jerking character, but that an intermitting pulse, formerly looked upon as symptomatic of pericarditis, is of infrequent occurrence, and that we shall err if we allow it weight in determining our diagnosis.

Febrile symptoms were noted in fifteen cases: of these five† were of pericarditis alone, three‡ of endocarditis, and seven§ of pericarditis and endocarditis combined. Fever, then, would seem to be as frequently related to endocarditis as to pericarditis. A reference to the eight remaining cases, of which febrile disturbance is not recorded, will show that in some of them fever had been present in the earlier stages of the illness, though it was not noticed when the patients were under observation in the hospital. In others, in which the disease was consecutive on pulmonary inflammation, it was impossible to relate the febrile symptoms to the pericarditis, rather than to the previously existing pulmonary disease.

The review, then, of these cases, in reference to the presence or absence of fever, goes to show that pericarditis and endocarditis rarely exist without some degree of febrile disturbance being present. This is particularly true of the cases of the disease associated with acute articular rheumatism; and in these, no doubt, the fever is as much due to the rheumatic inflammation of the joints as to the pericarditis and endocarditis. But there is more than this; for I am satisfied that a close observation of cases of acute articular rheumatism will very generally show, that coincident with the occurrence of pericarditis or endocarditis, there is a marked exacerbation of the febrile disturbance.

* Case 14.

† Cases 2, 3, 4, 9, 14.

‡ Cases 8, 12, 16.

§ Cases 1, 5, 7, 13, 15, 17, 23.

The occurrence of increase of fever in more than one case of acute rheumatism (for some days under treatment, and in which the state of the heart had been regularly inquired into,) has led me to suspect the commencement of pericarditis or endocarditis, and on careful examination the physical signs have, in each instance, confirmed the suspicion.

It is not improbable, that in acute rheumatism, as occurring in the sthenic constitutions of the inhabitants of European countries, with febrile disturbance, greater in degree and more continued in character, the importance attached to exacerbations of fever may not be applicable. It is so, however, I believe, to acute rheumatism, as it presents itself in the asthenic constitutions of the natives of India, with febrile disturbance, less in degree, and more remittent in character: it is when the exacerbation becomes longer in duration, occurs at irregular periods, or is of increased severity, that it has seemed to me of so much practical importance.

Some degree of hurry and shortness of breath were present in eight out of nineteen cases; for under this head I have also excluded those instances of pericarditis associated with pulmonic disease. Of the eight cases, four* are of pericarditis alone, two† of endocarditis, and two‡ of pericarditis and endocarditis combined. In none of the cases did the difficulty of breathing amount to orthopnœa.

The expression of countenance was observed to be anxious in five cases; two§ were of pericarditis, one‖ of endocarditis, and two¶ of pericarditis and endocarditis combined.

The occurrence of Delirium is noted only in one of these cases.** The occasional presence of nervous symptoms in association with acute rheumatism and pericarditis, independent of direct affection of the brain, first pointed out by Dr. Watson, though not illustrated by these cases, is, I apprehend, an important practical consideration. I can call to mind more than one case of head symptoms misunderstood at the time, but which I afterwards suspected to be of the nature now adverted to.

* Cases 2, 3, 10, 16. † Cases 8, 11. ‡ Cases 13, 15.
§ Cases 10, 21. ‖ Case 8. ¶ Cases 17, 23. ** Case 9.

The review which has just been made of the general and local symptoms of pericarditis and endocarditis, as observed in these cases, goes to confirm the now well-established fact that it is to the physical signs we must look for the means of forming a precise diagnosis of these diseases; that without these means many cases would escape detection, and very few would admit of being recognized with certainty.

Physical Signs.

Increased Præcordial dulness was present in nine cases: of these four* were pericarditis alone, and five† pericarditis and endocarditis combined—in all, the dulness probably depended on effusion into the pericardium. In two‡ the pyramidal form of the dull region was well marked; in two§ effusion was found after death, and in a third‖ case, also fatal, no examination of the body after death was made. In three¶ of the six cases in which recovery took place, the dulness disappeared, by absorption of the effusion. This was verified some time afterwards by dissection in the last of these cases. In the three** remaining recovered cases there was persistence of some degree of dulness, dependent, it was believed, on hypertrophy and dilatation of the left ventricle of the heart: these were cases in which considerable valvular disease was left behind.

Purring tremor was present in only three†† cases, and in all at a time when friction sound also existed. The tremor, then, in these cases, was, there is every reason to believe, dependent on pericarditis, and not on mitral valvular disease.

Præcordial fulness was observed in only two‡‡ cases, and in these was caused, we may believe, by effusion into the pericardium.

Friction sound.—The number of cases of pericarditis alone, and combined with endocarditis, amount to twenty-one; but from these four§§ must be excluded, in which no examination of the region of the heart was made.

* Cases 3, 9, 14, 25. † Cases 1, 6, 13, 17, 23. ‡ Cases 17, 25.
§ Cases 24, 25. ‖ Case 9. ¶ Cases 2, 18, 23. ** Cases 1, 6, 13.
†† Cases 15, 17, 25. ‡‡ Cases 1, 17. §§ Cases 2, 18, 19, 20.

Of the seventeen cases which remain, friction sound was heard in fifteen; it was absent in two—in one of these,* probably on account of the considerable effusion, indicated by the extent of the præcordial dulness; in the other† it is not noted, because I could never satisfy myself of its presence, though others at the time thought differently.

The duration of the friction sound is noted in nine cases: in two‡ it was present upwards of thirty days, and the result was in all probability adhesion of the surfaces; in two the friction sound was heard for twenty and twenty-one days—in one§ adhesion was suspected, in the other‖ it was proved to exist by subsequent dissection; in two, the sound was present for fourteen days—in one¶ the issue was probably in opaque patches, in the other** in adhesions; in one†† case the friction sound existed for seven days, and the issue was probably in adhesions; in one‡‡ the sound was heard for four days, and probably some degree of opacity of the surface was left behind; in one§§ the friction sound was audible for three days only, and in this case, on dissection many months after complete recovery, opaque patches were found here and there on the surface of the heart, but no adhesion.

In five of the cases in which friction sound had been present, there was the opportunity of examining the body after death. In three a considerable time elapsed between the period at which the sound had been audible, and death; in two‖‖ patches of organized lymph existed on the surface of the heart, but there was no adhesion of the surfaces; in one¶¶ firm adhesions united the heart to the pericardium. In two cases, death took place at the time when the friction sound was present; in one*** there were eight ounces of reddish serum in the sac of the pericardium, and flakes and shreds of lymph were deposited on the surfaces; in the other††† twelve ounces of clear fluid were found in the sac of the pericardium, three hours after death,—

* Case 3. † Case 21. ‡ Cases 1, 17. § Case 15. ‖ Case 22.
¶ Case 5. ** Case 7. †† Case 6. ‡‡ Case 4. §§ Case 10.
‖‖ Cases 10, 23. ¶¶ Case 22. *** Case 24. ††† Case 25.

this fluid spontaneously coagulated into a gelatinous mass when removed from the body, but there were no flakes of lymph deposited on the surfaces, and no vascularity of the serous covering of the heart, or lining of the pericardium was observed.

Four of the fatal cases confirm the generally received, and no doubt correct, opinion, that the friction sound is for the most part dependent on the roughening of the surfaces from lymph deposits; but Case 25, if correctly observed, would seem to show that effusion of the liquor sanguinis (the fibrine being as yet undeposited in the solid form) is adequate to cause a friction sound. The case was for a very short time under observation, and that immediately before death. Moreover, as remarked in the detailed comment which follows the narrative of the case, the abnormal sound may possibly have proceeded from the great vessels compressed at their origin by the effusion—a cause which has been suggested* as adequate to produce abnormal sound in pericarditic effusion. For these reasons, I am unwilling to attach undue importance to this case; yet it seems to me to render inquiry into the following questions very expedient:—

1*st*. Is it not probable that in exudations of liquor sanguinis from the inflamed capillaries of the serous linings of closed sacs, the deposition of the fibrine, in the solid form, does not take place so soon as is generally supposed?

2*nd*. Whether the movement of the liquor sanguinis (the fibrine as yet in the liquid form) between the serous surfaces is inadequate to produce a friction sound; and whether, in considering this question, we ought not to keep before us those cases of pericarditis in which the friction sound is present from the commencement, and to account for which has always been a difficulty, explained by some on the supposition that the surfaces are roughened from the turgid state of the capillaries which precedes effusion; by others, as Dr. Hope,† on the improbable idea

* *Walshe on Diseases of the Lungs and Heart*, p. 216.

† *Hope's Treatise on Disease of the Heart*, 4th edn., p. 144.

that lymph may be effused in the dry state, as first suggested by Lænnec ?

In two* of the fatal cases in which the friction sound was distinct, death took place several months afterwards, in one from cholera, in the other from pulmonic disease. In both opaque patches were found on the surface of the heart, but no adhesion between it and the pericardium. In Case 23 there was also valvular disease, and it may be argued that an endocardial murmur may have been mistaken for a friction sound. But this objection cannot be urged against Case 10 : in this, the friction sound had been undoubted, the valves and heart were quite healthy, with the exception of a few opaque patches on the surface of the right ventricle. This case, then, establishes the fact that there may be friction sound, and disappearance of that sound, and no greater structural change be caused than a few opaque patches on the surface of the heart. Though this, then, may, I believe, now be admitted as a fact in the pathology of pericarditis, still the consideration of the statement made relative to the duration of the friction sound, as observed in these cases, leaves little room for doubt that when the sound continues present for fourteen days and upwards, the lymph effusions may be held to have caused adhesion between the heart and pericardium.

Jogging movement of the Heart was noticed only in one† case, and in this the history pointed to pericardial adhesions as the probable issue. It may, therefore, be looked upon as confirmatory of the opinion entertained by Dr. Hope relative to the import of this sign.

XV.

On the Treatment of the Disease.

The observations on the treatment have reference to seventeen cases.

In none was *general blood-letting* required : the constitutions of the patients admitted into the Jamsetjee Hospital are for the

* Cases 10, 23. † Case 14.

most part too asthenic to admit of the use of this antiphlogistic means.

In eleven* cases, *local blood-letting* by means of leeches was had recourse to. The stage of the disease, and the state of the pulse and skin, were the guides to the adoption and degree of this measure. Of its efficacy, when the circumstances are appropriate, there can be no doubt.

In fourteen† cases, one or more *blisters* were applied to the præcordial region. The liquor lyttæ was the preparation generally used, and the surface to which it was applied ranged in extent from three to four inches square. The blister was in general used after local depletion had been carried to the extent that was deemed admissible, or was applied unpreceded by local blood-letting in the cases for which this latter measure was considered inappropriate. Nor was the blister had recourse to more in cases in which liquid effusions were believed to be present than in those in which they were absent. Looking upon the derivant action of the counter-irritant as a means which tends to favour the return of a normal state of the circulation in the inflamed capillaries, and believing that it is only by a change of this kind in the circulation of the affected capillaries that the absorption of serum or lymph effusions is favoured, and the organization of unabsorbed lymph deposits advanced, it seems to me, as regards the use of blisters, an immaterial question whether the issue of the inflammation has been serous effusion, requiring to be absorbed, or lymph exudation, requiring to be absorbed or organized into tissue, before recovery can take place : in all, the one antecedent is necessary, viz. a more or less complete return to the normal state of the capillary circulation of the structures, in the proximity of the deposits.

In regard to the utility of local blood-letting and blisters in appropriate cases and stages, there is, amongst practitioners, I apprehend, no great difference of opinion. Let us now pass to the consideration of a remedial means still in some respects open to debate, and of great practical importance.

* Cases 1, 3, 5, 6, 7, 8, 9, 10, 14, 16, 21.

† Cases 1, 4, 5, 6, 7, 8, 9, 10, 13, 14, 15, 16, 17, 21.

Mercurial influence was induced in ten* cases. In all of them, with one† exception, local blood-letting was also used, and in all blisters were applied. Of these ten cases, three‡ were of pericarditis alone, one§ of endocarditis, and six‖ of pericarditis and endocarditis combined. Five¶ of the ten cases in which mercurial influence was induced recovered, and in five, though life was saved, structural change remained behind. Of the eight cases classed under a former head as recoveries, mercurial influence was induced in five, but in three it formed no part of the treatment, which in one consisted of local blood-letting and blisters, in another of blisters, in a third of Dover's powder and nitre alone. The mercury was given in the form of calomel, in two or three grain doses, combined with a quarter or half a grain of opium, given every third, fourth, or sixth hour; and in cases in which there was much febrile disturbance, from a quarter to a third of a grain of tartar emetic was also combined. The mercury was given with caution, so as not to induce a greater effect than slight swelling of the gums, and gentle ptyalism; and this state was maintained for several days. The adoption of the mercurial treatment was never had recourse to without a strict inquiry into the state of the patient's constitution, with the view of ascertaining whether there had been present conditions likely to favor a scorbutic or other cachexia. This care is essential in the treatment of the class of patients who resort to this hospital, and, indeed, I would add, of natives of India generally.

We find, then, that of ten cases in which mercurial influence took place, five recovered,—but in these local blood-letting and blisters were also used; and that of eight cases in which recovery took place, mercurial influence, preceded by leeches and blisters, had been induced in five,—but in three mercury had not been given. In this statement, then, we have no striking proof of the efficacy of the mercurial treatment of pericarditis and endocarditis; yet my impression is distinctly in favour of its cautious adoption in suitable states of the constitution.

* Cases 1, 3, 5, 6, 7, 10, 13, 15, 16, 21.
† Case 13.
‡ Cases 3, 10, 21.
§ Case 16.
‖ Cases 1, 5, 6, 7, 13, 15.
¶ Cases 3, 5, 10, 16, 21.

The present state of therapeutic science teaches us that mercurial influence is adverse to lymph deposits, and favourable to their absorption; and so long as this doctrine remains unrefuted, it is the course of prudence to yield to it some measure of our faith, and to act in some degree under its guidance. At the same time, however, we must not forget that if mercurial influence operates for useful ends on states of the blood, well constituted as regards its fibrine and red corpuscles, it can hardly fail to cause harm in opposite states of the system. The tendency to an asthenic state of the constitution is not only more or less marked in the natives of India generally, but is also characteristic of that of Europeans who have been long resident in India. My present belief, then, is, that mercurial influence in some forms and stages of inflammatory disease is an efficacious remedial means; but at the same time I entertain a firm conviction that its indiscriminate and excessive use has done much more harm in the treatment of disease than its rational use has effected of good. I allude chiefly to disease in India.

In one* case in which the use of mercury was contra-indicated liquor potassæ was substituted: it was so, because in similar asthenic states of the system present with pneumonia in the second stage, many good recoveries had been brought about under the use of this remedy.

CASES.

CASE 1.—*Acute asthenic rheumatism, followed by pericarditis and endocarditis, disease of the mitral und aortic valves, and dilatation and hypertrophy of the left ventricle.*

William Farrell, an European lad, 17 years of age, following the occupation of a Sailor, had been the subject of rheumatism, in October 1847, from which he recovered. He was admitted into the Jamsetjee Jejeebhoy Hospital on the 1st April 1848, affected with primary syphilis. He was brought under the gentle influence of mercury: the chancre healed, but he continued under

* Case 17.

treatment during May and June, affected with indolent bubo of the left groin, and occasionally with febrile symptoms. Early in July he began to complain of pain of the shoulders, ankles, elbows, and wrists: the pain was attended with swelling, and much febrile excitement. On the 30th July, the swelling and pain of joints still persisting, he experienced a dull heavy pain in the præcordial region, and a distinct exocardial murmur was for the first time noted. Leeches and blisters were used, and the mercurial influence was induced. The murmur continued, the impulse of the heart was increased, and there was more or less affection of the joints present. He was transferred to the clinical ward on the 17th September. There was then some slight degree of fulness of the præcordial region—the dulness occupied a circle of three inches diameter, a point a little below the nipple being its centre. The impulse of the heart was much increased—the apex beat between the 5th and 6th ribs, an inch below the nipple. A loud rasping murmur obscured both sounds of the heart as high as the 3rd costal cartilage : above this there was a distinct blowing systolic murmur, the second sound of the heart being in this situation distinct and natural. He continued in the hospital till the 11th October, when he was discharged at his own request. During the time that he was under observation in the clinical ward, he was generally free of febrile symptoms, and did not complain much of the joints. The increased action of the heart was always present; the pulse was sometimes jerking, at others not. The urine showed no traces of albumen. The præcordial dulness continued as on admission, but the character of the cardiac murmurs changed somewhat : the rasping murmur ceased to obscure both sounds, and became systolic, and was most distinct in the direction of the apex,—then the rasping character was best heard at the 4th costal cartilage, and changed into a musical systolic sound, in the direction of the apex; and lastly, at the date of discharge from the hospital, the rasping character had almost disappeared, and the murmur was systolic, loud, and musical, in the direction of the apex, and fainter and blowing, but still systolic in the direction of the upper part of the sternum; the second sound continued distinct and unchanged.

During his stay in the clinical ward, he was treated with colchicum and digitalis, Dover's powder and nitre, and rubefacient applications over the præcordial region.

From subsequent accounts, I learned that this lad died at Kurrachee in the early part of the year 1851. During the period intervening between his discharge from the Jamsetjee Jejeebhoy Hospital and his death, he continued out of health, suffering from palpitation, and sense of oppression about the chest, and occasionally pain and swelling of the joints. He had been confined to bed two months before his death. No examination of the body after death was permitted.

Remarks.—Here we have well marked the relation between the disease of the heart and the rheumatic affection, and, further, we have the acute rheumatism arising in a state of the system asthenic from long residence in hospital, and medical treatment, of which the induction of mercurial influence was a part. The exocardial murmur had disappeared before the transfer of the patient to the clinical ward, and adhesion of the surfaces had probably resulted. The rasping sound heard on admission into the clinical ward was, I believe, a mitral murmur, which afterwards became musical in character. The systolic blowing sound, heard best above the base of the heart, was no doubt due to obstructive aortic disease ; the increased dulness to dilatation, with hypertrophy of the left ventricle.

CASE 2.—*Pericarditis ; extensive lymph effusion after death ; rheumatism : an imperfect record of symptoms during life.*

Deu, a Maratha female, 20 years of age, was admitted into the Jamsetjee Jejeebhoy Hospital on the 12th October 1848, after fifteen days' illness. She was much emaciated, complained of pain of the joints, and uneasiness at the epigastrium ; the pulse was feeble, the breathing short, and she had suffered from fever : she died on the 22nd October. The symptoms noted in the case during the time she was under treatment were—short breathing, pain at the epigastrium, and a very feeble pulse. There is no record of any examination of the heart. On examining the body six hours after death, the heart and inner surface of

the pericardium were found covered with a layer of lymph half a line in thickness, in places organized and membranous; in others dotted red and flaky. There were some crude tubercles, the size of a bean, in the apex of both lungs. Over the surface of the liver, chiefly towards its thin edge, and matting it to the hepatic flexure of the colon and omentum, there was a layer of lymph, firm, but granular and tubercular in character.

Remarks.—Of this case the record is very imperfect; but, so far as it goes, it shows the feeble pulse, the uneasy epigastrium, and the short breathing as symptoms of pericarditis, also disease related to rheumatic diathesis, and a general state of cachexia.

CASE 3.—*Pericarditis, consecutive on acute rheumatism, leading to effusion into the pericardium, as indicated by much præcordial dulness; removed by leeching, blisters, and mercurial influence.*

Ebrahim, a Mussulman Sailor, 30 years of age, while in China, eleven months before he came under observation, suffered from pain and swelling, chiefly of the elbows and knees, for which, and uneasiness of the præcordial region, he was under treatment in hospital at Hongkong. He returned to Bombay about four months before his admission into the clinical ward of the Jamsetjee Jejeebhoy Hospital, on the 24th October 1848, twenty days after his return to Bombay. Pain of the left side of the chest and epigastrium, attributed to exertion in turning the capstan, was experienced. On admission, he was considerably reduced in flesh; the breathing was hurried; he pointed to the margin of the left false ribs as the seat of pain. There was dulness on percussion, from the level of the 2nd left rib to the margin of the false ribs, also from the sternum to an inch external to the nipple; the impulse of the heart seemed distant, and the sounds confused; there were sibilous and subcrepitous rales about the left mammary region; the pulse was 80, regular, small, and easily compressed; there was heat of skin; occasional cough, which caused pain to shoot towards the left scapula; there was very little expectoration;

the urine was not albuminous. Leeches were applied to the præcordial region, followed by a large blister, and calomel and opium were exhibited. The pulse for the three first days after admission ranged from 52 to 60, was soft and small. The breathing became calm. On the 2nd November, *before* any tenderness of the gums had appeared, the præcordial dulness did not extend above the 4th rib, nor beyond the nipple, and the sounds of the heart were natural. Now the mercurial influence began to appear, and tenderness of the gums and slight ptyalism were kept up till the 19th. He was discharged at his own desire on the 21st November. The præcordial dulness did not extend to the level of the nipple, nor so far externally. The sounds and impulse of the heart were natural, and he made no complaint of any kind.

CASE 4.—*Pericarditis, marked by general symptoms, and by friction sound; the result not known; associated with rheumatism.*

Donga, a Rajpoot Sepoy, 30 years of age, an inhabitant of Marwar, who had lately arrived in Bombay after a journey of two months. About thirteen days before he came under observation, he had suffered from daily accessions of fever, till within four days before his admission into hospital, when he began to be affected with pain of the knee joints, and of the whole body. He was admitted into the clinical ward on the 11th January 1849. He was much reduced; the abdomen was soft, and without induration; the feet were œdematous; the pulse small. He complained of pain of the surface of the body generally, but chiefly of the abdomen, and of the knee joints. On the 12th the pulse was very feeble; the features collapsed; there was no diarrhœa, but there was tenderness on pressure at the margin of the left false ribs, and a slight febrile accession towards evening. A sinapism to the left side, and diffusible stimuli were used. On the 13th the pulse was rather better developed: he complained chiefly of pain of the knees, the ankles, and left shoulder, but these joints were not swollen; the eyes were sunken, the expression anxious; he made no complaint of pain of chest,

or of cough, and the breathing was calm; there was no increased præcordial dulness; the two sounds of the heart were well marked, but there was a friction sound mixed with them, most audible over the cartilage of the 4th rib, between the nipple and the sternum. A blister was applied to the præcordial region; colchicum in small doses, with nitrate of potass, and Dover's powder with hydrargyrum cum creta at bed-time, were prescribed. On the 14th, 15th, and 16th, the pain of the joints was much better; on the 19th it was nearly gone, and the friction sound was no longer audible. The pulse was still feeble, and the blister discharging, and at his urgent request he was permitted to leave the hospital.

Remarks.—This patient was one of a class of men who are exposed to much fatigue and vicissitudes of weather. They leave Marwar at the opening of the fair season, as the guards of carts proceeding to Bombay, laden with opium, and generally suffer much from sickness after their arrival in Bombay. In this instance, there was the rheumatic diathesis in an asthenic individual. The feeble pulse, the anxiety, the pain at the margin of the left ribs, so often indicative of pericarditis, took precedence of, and their import was confirmed by, the friction sound, which subsequently appeared. The issue of the case is not known, but it was probably in recovery, as the general symptoms had improved, and the friction sound had disappeared at the period of his discharge.

CASE 5.—*Articular rheumatism for eleven days, succeeded by endocarditis, then pericarditis; both removed by leeching, blisters, and gentle mercurial influence; the rheumatism also cured.*

Govind Mattel, a Hindoo Labourer, 20 years of age, an inhabitant of Rutnagherry, and a year resident in Bombay. About 11 days before he came under observation, after return from his daily work, he was seized with pain of the loins: on the subsequent days the knee joints became swollen and painful, and then the ankle joints. Before this attack, he had generally enjoyed good health. He was admitted into the clinical ward on the 26th

January 1849. He was in good condition; the ankle, knee, shoulder, and elbow joints were swollen, and painful; the pulse was frequent, and of good volume and strength; the skin was slightly above the natural temperature; the tongue coated posteriorly. There was slight tenderness of the abdomen generally, but it was most marked along the margin of the left false ribs, from which situation the pain stretched to the præcordial region; the impulse of the heart was natural—the first sound seemed louder, the second was healthy. On the morning of the 27th the sounds of the heart were somewhat confused. At the evening visit there was a distinct systolic murmur, best heard between the nipple and sternum. On the 28th the murmur was not so distinct, and was in part replaced by the first sound. On the 29th the impulse of the heart was slightly increased; both sounds were distinct, but they mixed with a friction murmur. There was no præcordial dulness, nor distinct pain of the præcordial region, and the pulse was of good strength. He was leeched several times, a blister was applied to the præcordial region, and calomel and opium were given. The pain and swelling of joints had much decreased by the 31st January. He had occasional evening febrile accessions. The gums became swollen and tender on the 3rd February. The friction sound was last heard faintly on the 11th. He was discharged on the 15th February, with the sounds of the heart natural, the pain and swelling of the joints gone, and the gums well. After the establishment of the mercurial influence the treatment consisted chiefly of the exhibition of Dover's powder and nitrate of potass.

Remarks.—Articular rheumatism for eleven days preceded the heart complication, which was indicated by uneasiness at the margin of the left false ribs, while yet the only change in the sounds of the heart was a slight increase in the degree of the first sound. The signs point to the existence of endocarditis in the first instance, its removal, and replacement by pericarditis. The friction sound was audible for fourteen days: it disappeared, not suddenly, but by a gradual decrease. Nor were there any traces of the endocarditis left,—the sounds of the heart were natural at the time of the patient's discharge. The absence of

præcordial dulness showed that there had been no increased serous effusion into the sac of the pericardium.

CASE 6.—*Acute rheumatism, second attack, complicated with pericarditis and endocarditis. The history of the first attack of rheumatism illustrative of the inefficacy of venesection and frequent leeching.*

Suddoo Bhewa, a Maratha, of stout habit, 30 years of age, a native of Bombay, and following the occupation of a Vegetable seller, addicted to the free use of spirituous liquor, but never affected with syphilis. About seven months before he came under observation, after having been freely bled at the arm, he was exposed to cold and wet, consequent on which the right knee joint became swollen and painful. Leeches were applied with relief to that joint, but the swelling and pain successively attacked the different joints of the upper and lower extremities, and continued troublesome for a period of three months, notwithstanding the free and frequent use of leeches. He then enjoyed good health till a fortnight before his admission into the clinical ward on the 14th January 1850, when the pain and swelling, shifting from joint to joint, recurred, and were attended with febrile excitment. On admission the elbows were chiefly affected. The breathing was somewhat hurried, but there were not present any signs that indicated pulmonary disease. The præcordial dulness extended from the 3rd intercostal space to the 6th rib, and from the nipple to the sternum. The sounds of the heart were natural, but its impulse was somewhat increased. There was heat of skin; the pulse 104, of good volume and strength; the tongue was dryish, and there were sordes on the lips. On the 17th the pain of joints was more troublesome, the impulse of the heart was not increased, but a murmur, perceptible to the inner side and above the nipple, accompanied both sounds of the heart; and there was slight crepitus audible in both dorsal regions. Leeches were applied to the præcordial region, followed by a blister, and calomel 2 grs., tartar emetic $\frac{1}{4}$ gr., and opium $\frac{1}{2}$ gr., were given every fourth hour. Under this treatment the heat of skin, and the swelling and pain of joints gradually subsided. On

the 24th the gums were slightly tender. On the 25th the cardiac murmur is described as systolic in character, and best heard blow the nipple. He was discharged at his own request on the 29th, free of the febrile and rheumatic symptoms, but with the systolic murmur still distinct, and the præcordial dulness somewhat less than on admission. The urine was tested on several occasions, was always free of albumen, and copious in quantity.

Remarks.—In this case we have the first attack of acute rheumatism excited by cold, subsequent to a free abstraction of blood by venesection; and we have the disease, continuing for three months, driven from joint to joint by the repeated application of leeches.

The first murmur was exocardial in character, the second endocardial; and though the swelling of the joints decreased and disappeared under the use of the calomel, opium and antimony, yet the cardiac murmur persisted, notwithstanding the mercurial influence slightly induced and kept up.

CASE 7.—*Acute rheumatism, pericarditis, and endocarditis. Left the hospital not cured.*

Dhunjeebhoy Pallonjee, a Parsee Carpenter, 18 years of age, born in Surat, but resident in Bombay since his boyhood,—addicted to the occasional use of spirituous liquors, but never the subject of any syphilitic affection,—of spare habit and feeble constitution, was admitted into the clinical ward on the 6th February 1850. For fifteen days previously he had been suffering from pain of loins, and pain with swelling of the joints, commencing gradually, but for the last six days present with considerable severity. The pain began in the loins, then extended to the knees, ankles, shoulders, wrists, and lastly the joints of the phalanges of the fingers, and was attended, during the last eight days, with daily accessions of fever. On admission, the knees, ankles, wrists, and the joints of the fingers, were somewhat swollen and painful. The respiration was calm, and vesicular murmur general and unmixed; the skin was considerably above the natural temperature. The febrile disturb-

ance was said to come on daily with chills at noon, and to terminate with slight sweating at 4 P. M. The tongue was somewhat dry, and furred at the back part, and somewhat florid at the tip and edges; the pulse was frequent and bounding, but easily compressed. There was no complaint of pain at the præcordial region, or margin of the left false ribs ; there was no dulness on percussion of the præcordial region; the impulse of the heart was slightly increased. Just below the nipple there was a distinct exocardial murmur, not audible over the 3rd and 4th cartilages—there both sounds of the heart were heard. Abdomen rather retracted. On the 8th February, in addition to the exocardial murmur, a systolic murmur was perceived over the 3rd and 4th left cartilages, and both these murmurs continued, unattended by increased dulness, till the 20th of February, when they were not heard, but the sounds of the heart were described as being somewhat muffled in character. During the 8th, 9th, 10th, and 11th, there was decrease of the pain and swelling of the joints, and the febrile disturbance became less in degree. Both the affection of the joints and the febrile symptoms were, however, aggravated during the five subsequent days. They then again declined, and had ceased by the 20th of February. On the 23rd there was again return of fever and of pain of joints, which continued more or less present till the 3rd March, when he was removed from the hospital. From the 20th February to the 1st March no cardiac murmur was perceived, but the heart sounds had still a muffled character, and on the latter date were becoming rough. There was no increased præcordial dulness. The pulse retained its jerking character till the 15th, when it became soft, and finally small and easily compressed. The urine was from 30 to 40 oz. in the twenty-four hours, neutral, sherry-coloured, not of low density, and not albuminous.

Treatment.—Leeches were twice in small numbers applied to the præcordial region, followed by a blister ; 2 grs. of calomel, with $\frac{1}{4}$ gr. of tartar emetic and $\frac{1}{2}$ gr. of opium were given every fourth hour,—but on the 9th it was necessary to omit this on account of irritability of the bowels which it occasioned. Nitrate

of potass, ipecacuan, and opium, with mercurial inunction, were substituted. On the 11th the gums became swollen and tender, and continued so far several days, and now two or three doses of quinine were given daily at the period of remission, combined with the ipecacuan and opium, and on the 1st March a blister was repeated to the præcordial region.

Remarks.—In this case both the pericarditis and endocarditis would have been overlooked, had it not been for the recognition of their characteristic murmurs—there were no general symptoms to direct attention to the heart. It is more than likely that the issue of the pericarditis was in adhesions of the surfaces. The treatment in this case was not satisfactory.

CASE 8.—*Acute rheumatism; endocarditis—mitral valve.*

Nowrojee Nathoobhoy, a Parsee servant, 27 years of age, native of a village near Surat, and a resident in Bombay for six years, of unhealthy appearance, was under treatment in the Jamsetjee Jejeebhoy Hospital from the 25th May to the 2nd June 1850, affected with rheumatism, confined chiefly to the joints of the right side of the body. He was discharged well, but about the 18th of June, consequent on exposure to wet, the left thumb became swollen and painful; then succeeded pain and swelling of the ankle and knee of the same side, and other joints became affected also. Febrile symptoms also came on, and on the fourth day there was some degree of shortness of breath. He was re-admitted into the hospital on the 26th June. The countenance was anxious; the respiration was slightly short and hurried; the skin was somewhat above the natural temperature; the pulse 104, and rather small; the tongue furred in the centre, and florid at the tip and edges. The joints, chiefly of the left side, were somewhat swollen and red, and very painful, and he complained of uneasiness of the præcordial region. There was no abnormal dulness of any part of the chest on percussion; the breath sounds were natural; the action of the heart was slightly increased, and there was a distinct systolic murmur, best heard an inch and a half below, and an inch internal to, the nipple. Leeches were applied to the

præcordial region, followed by a blister; and he was directed to take 1 gr. of calomel with $\frac{1}{3}$ gr. of tartar emetic, and $\frac{1}{2}$ gr. of opium, every fourth hour. The pain of joints lessened, the febrile symptoms abated, the countenance lost its anxiety, the respiration became calm, the pulse fell to 88, and on the 27th June the systolic murmur was nearly gone. There was no affection of the gums from the pills: they were omitted, and Dover's powder, with nitre and ipecacuan, was substituted. The improvement continued. The murmur altogether disappeared till the 2nd July, when there was slight recurrence of pain of joints, and the murmur again became audible. He was discharged from the clinical ward on the 12th July, free of all rheumatic symptoms. A slight systolic murmur, however, was present.

The urine was tested several times: there were no traces of albumen.

Case 9.—*Rheumatism; pericarditis; delirium before death.*

Ruttonjee Framjee, a Parsee servant, aged 29, of feeble constitution, was admitted into the Jamsetjee Jejeebhoy Hospital on the 3rd June 1850. He had been ill, it was reported, for four days, and complained of general pain, with stiffness of limbs, accompanied with slight febrile symptoms. On the 7th there was increase of restlessness, with cough, præcordial uneasiness, dulness, and friction murmur. Leeches and blisters were applied to the præcordial region, after which there was considerable delirium. He was removed by his friends on the 10th, shortly before death. No examination of the body permitted.

Case 10.—*Pericarditis; friction murmur distinct, and then altogether disappearing. He was cured. Eight months afterwards, death from cholera: opaque patches on the surface of the heart; no pericardial adhesions.*

Tayjah Dongur Sing, a Hindoo Fruit-seller, 28 years of age, in tolerable condition, for six years addicted to the habit of opium-smoking, was admitted into the clinical ward on the 28th June 1850, having been ill only since the day preceding. The countenance was somewhat anxious; the respiration short and

hurried, (68 in a minute,) and almost entirely abdominal; the skin was of natural temperature; the pulse 76, rather small, but sharpish; and the tongue was a good deal furred. On percussion of the anterior part of the chest no defective resonance was detected, and vesicular respiration was distinct and unmixed. In the præcordial region, over a spot about an inch and a half in diameter, just internal to the nipple, there was heard a murmur, partly of a rubbing, partly of a creaking character. In this situation there was tenderness on pressure.

The sounds of the heart were distinctly audible, and the impulse of the heart was not much increased. He pointed to the præcordial region, and to the margin of the left false ribs, as the seat of pain, felt since the day preceding his admission. The pain did not extend to the back or left shoulder. He was quite free of all pain of the limbs; but he stated that he had suffered eight years previously from a severe attack of swelling and pain of the joints, chiefly the knees and ankles; and the marks of scarifications were still visible on the knees. For this affection of the joints, he also underwent two long courses of mercury, and continued ill for seven months. Subsequently, however, he had enjoyed good health. The only circumstance to which he could attribute his present illness was exposure to wet, to which he had been subjected ten days previously. Forty-eight leeches were applied to the præcordial region, followed by a blister; 3 gr. and then 2 gr. doses of calomel, with $\frac{1}{8}$ gr. of tartar emetic, and $\frac{1}{4}$ gr. of opium, were given every fourth hour. On the 8th June the gums were tender, and the calomel was omitted; on the 1st July the mercurial influence was still more developed. On the 29th June the friction sound was still distinct; on the 30th it had disappeared, and was not again heard. He was discharged well from the ward on the 10th July.

This patient again presented himself at the hospital on the 21st August, having experienced some uneasy sensations in the præcordial region, but the sounds and action of the heart were natural; and after the action of some aperient medicine he was quite relieved, and left the hospital on the 22nd August. He was not again seen till the 7th of March 1851, when he was

admitted in the collapsed stage of cholera, that disease being at the time prevalent : re-action did not take place, and he died on the evening of the 10th.

Inspection.—Chest.—There was no increased quantity of fluid found in the pericardium, and there were no adhesions between the pericardium and the heart. The inner surface of the pericardium was pale, and without deposit of any kind. The heart was rather small; there was no dilatation of any of its cavities. Over the centre of the anterior wall of the right ventricle there was an opaque patch, about half an inch long and a quarter of an inch in breadth, which, with moderate traction with the forceps, could be separated from the pericardial covering of the heart in the form of a thin firm layer of areolar tissue. The free surface of the patch was quite smooth. At the upper part of the left ventricle there was a smaller and thinner patch. Elsewhere, here and there on the surface of the heart, other opaque spots were noticed. The endocardium was healthy, and so were also the valves.

There were two or three small spots of commencing deposits on the inner surface of the ascending aorta.

Remarks.—This case has been already published in the *London Medical Gazette* of the 16th May 1851. It was so because at the time Dr. W. S. Kirke had called in question the commonly received opinion, which maintains that when there has been acute pericarditis, with friction sound, followed by disappearance of the sound and restoration to tolerable health, this result has been effected by pericardial adhesions. This case confirms Dr. Kirke's opinion, and, I think, definitively proves that we may have friction sound and recovery, without any other structural change than the opaque white patches so frequently observed on parts of the surface of the heart.

CASE 11.—*Rheumatism ; valvular disease, probably the tricuspid, from endocarditis.*

Itoo Mahadoo, a Hindoo Beggar, 30 years of age, of short stature, a dood deal reduced, and of intemperate habits, was under treatment in the clinical ward, from the 16th July to the

2nd August 1850. He had been affected with primary syphilis about five years before, and since then had suffered from occasional pain of the large joints, more particularly during the two months before admission, when febrile symptoms were also at times present. He had also for a year and a half experienced occasional uneasiness of the præcordial region. On admission the countenance was slightly puffed; the respiration somewhat short and hurried; the pulse not well developed, and irregular. The chest sounded well on percussion, except in the left dorsal region, where there was abnormal dulness, dependent, it was believed, on splenic enlargement; the vesicular respiration loud and general, mixing with occasional sonorous rale. The impulse of the heart was best felt at the ensiform cartilage, and there also there was a systolic murmur, which became indistinct in a direction upwards, or to the left. The abdomen was somewhat resistent, and there was abnormal dulness of the epigastric region. These symptoms continued during his stay in hospital. He suffered also from more or less pain, with slight swelling of the large joints; had occasional febrile accessions, and for some days he was affected with diarrhœa; the urine showed no traces of albumen. He was treated chiefly with Dover's powder, nitrate of potass, and quinine.

Remarks.—This is another instance of the relation of valvular disease to rheumatism: the diagnosis is probably doubtful. The situation of the murmur seems to point to the tricuspid valve; but the physical signs of the lungs are not given with sufficient minuteness, and it is not improbable that the situation of the impulse of the heart and of the murmur may have been caused by displacement from emphysema.

CASE 12.—*Acute rheumatism and endocarditis.*

Geerdhur, a Lowana Hindoo, 20 years of age, a Gram-seller by occupation, a native of Bhownuggur, but resident in Bombay from his boyhood, not in the habit of eating opium or smoking ganja, was admitted into the clinical ward on the 8th October 1850. Was affected with syphilis five years before, and had during the six months before admission suffered from frequent

attacks of intermittent fever, attended during the last ten days with pain and swelling of the large joints, the febrile symptoms coming on with chills towards evening, and intermitting without distinct sweating at day-break. On admission, the ankle joints and the left wrists were somewhat swollen, hot, and painful; the right wrist and both knee joints were painful, but not swollen. The respiration was calm; there was no dulness on percussion of the chest, and no rales mixed with the vesicular respiration. A little internal to the left nipple, in the intercostal space between the 4th and 5th ribs, there was a slight systolic murmur; elsewhere both sounds of the heart were heard. No uneasiness of the præcordial region. The pulse was frequent, small, and sharpish. During the 9th and 10th the pain of joints was present, the febrile exacerbations experienced, and the cardiac murmur audible. The urine gave no traces of albumen. He was treated with Dover's powder, nitrate of potass, and an occasional purgative; also with quinine, combined with nitrate of potass and colchicum wine. On the 11th and 12th he was free of fever and pain of the joints, and the cardiac murmur had almost disappeared. He left the hospital at his urgent request.

Case 13.—*Acute rheumatism, attended by pericarditis and endocarditis, leading to mitral valvular disease.*

Burjorjee, a Parsee Fish-seller, 21 years of age, of feeble habit, and addicted to the use of spirituous liquors, had been the subject of rheumatism two years before he came under observation, and had recovered from the attack. He was admitted into the clinical ward on the 10th October 1850, after two days' illness. The knee, wrist, and ankle joints were somewhat swollen and painful; the skin was above the natural temperature, and dry; the pulse frequent and jerking; the tongue thickly coated and moist; the respiration was hurried, and chiefly abdominal, and the left side moved less than the right, but there was no pain complained of. The præcordial dulness reached from the 3rd to the 6th rib, and from the left margin of the sternum to the nipple, the action of the heart was forcible, and the apex beat between the 5th and 6th ribs.

A rough murmur obscured both sounds of the heart,—it was most distinct below the nipple, became faint at the 3rd costal cartilage, and there both sounds of the heart were distinct.

The patient continued under treatment till the 4th January. The swelling and pain of the joints were more or less troublesome; there were frequently febrile symptoms, with a tendency to evening exacerbations, and at times attended with delirium. The pulse was generally frequent and jerking, but compressible. He was for some time also affected with cough, muco-puriform sputa, hoarseness of voice, and general dry bronchitic rales. The urine was frequently tested, but showed no traces of albumen. The præcordial dulness did not increase; the exocardial murmur disappeared, but latterly there was a distinct systolic murmur, best heard at the apex, and there slightly obscuring the second sound, which sound, however, was distinct at the 3rd costal cartilage. When discharged the rheumatic symptoms had been removed; the pulmonic ones were much improved, but the cardiac systolic murmur continued. Blisters were applied to the præcordial region; he was brought under the gentle influence of mercury, then treated with anodynes, diuretics, and disulphate of quinine.

Remarks.—In this case the pericarditis probably terminated in adhesions, and the signs latterly, and at the period of discharge, were of disease of the mitral valve. It was also suspected that miliary tubercles were being deposited throughout the lungs.

CASE 14.—*Acute rheumatism; pericarditis; restoration to tolerable health, but with persistent jogging movement of the heart.*

In April 1851 I was asked to see a Parsee female, aged 50, who had on former occasions suffered from rheumatism. When seen by me, she had been ill eight days. The wrists, knees, and ankles were swollen and tender; there was febrile excitement, and a distinct præcordial friction murmur. She was treated with leeches to the præcordial region, calomel, and tartar emetic for two or three days, but the system was not affected; then

with laxatives, Dover's powder, and nitre, and lastly quinine. The rheumatic symptoms were removed in fourteen days.

I saw her again on the 27th July. There had been no return of rheumatism, and she had improved much in condition; but she complained of occasional dyspnœa, and the pulse intermitted. There was no abnormal præcordial dulness, and no murmur; the sounds of the heart were rather confused, and there was a very marked jogging movement, occurring about ten times in the minute. In June 1852 it was reported to me that she continued to enjoy tolerable health, but that the jogging movement of the heart was still present.

CASE 15.—*Pericarditis and endocarditis in a cachectic female, the subject of rheumatism. Discharged from hospital much improved, but with mitral valvular disease.*

Buchoobye Saporjee, a Parsee female, 38 years of age, was admitted into the Jamsetjee Jejeebhoy Hospital on the 12th August 1851. She was much emaciated, and had been affected with rheumatic pains of the joints for several months. On admission there was heat of skin, the pulse was small, the breathing hurried, and she pointed to the left side of the chest as the seat of pain. There was no increased præcordial dulness, but the action of the heart was increased, and a purring thrill was distinct to the hand, and friction murmur on the application of the stethoscope. She continued under treatment till the 22nd of September, when she was discharged, much improved in health. The breathing became calm; the pain of the chest removed; the increased action of the heart subsided. A murmur continued during her stay in hospital, and was present at the period of her discharge. Up to the end of August it was exocardial in character, and had become very faint. About the 8th of September it began to be systolic, and was distinctly so at the period of her discharge, and was best heard at the apex and below it. The pain of joints was more or less present, affecting the shoulders, the knees, the wrists, but not attended with much swelling. The urine ranged from 20 to 40 ounces, and was not albuminous. At the period of her discharge the pain of joints had ceased; she had improved in

flesh, and made no complaint of cardiac symptoms. The treatment consisted of three blisters to the præcordial region, and a combination of Dover's powder, nitrate of potass, ipecacuan, and hydrargyrum cum creta, given every fourth or sixth hour, till the gums became slightly tender; then the Dover's powder and nitre were continued at bed-time, and diluted nitric acid was given three times in the day.

CASE 16.—*Rheumatism; acute endocarditis, leaving slight mitral valvular disease.*

Domingo de Almeida, a Portuguese Schoolmaster, 20 years of age, was admitted after eight days' illness into the Jamsetjee Jejeebhoy Hospital, on the 15th February 1852. There was considerable febrile disturbance; the evening exacerbations were well marked, and there was much sweating at times; there was anxiety and pain, but no swelling of the joints; the tongue was very coated. These symptoms persisted, and on the 20th there was slight cardiac uneasiness complained of. On the 28th it was still more felt, and extended to the margin of the left ribs; and now there was increased action of the heart, and a systolic murmur audible. He continued under treatment till the 3rd of April, when he left the hospital, still weak, with slightly increased impulse of the heart, but the murmur not present. He was treated with occasional purgatives, Dover's powder, nitre, and quinine; blue pill and muriate of morphia at bed-time. Leeches and a blister were also applied to the præcordial region, and the mercurial influence was slightly induced. This patient presented himself for examination on the 2nd July 1852. He had improved in appearance, made no complaint of palpitation, but had occasional uneasiness of the præcordial region; there was no abnormal præcordial dulness; the impulse of the heart was somewhat increased; there was a slight jogging action, and a faint systolic murmur, best heard at the apex. This murmur had disappeared when he was last seen, on the 2nd October, but the impulse was still somewhat increased.

Remarks.—In this case the anxiety and the febrile symptoms were in excess of what was to be expected from the state of the

joints, and when this is the case, attention should be closely given to the state of the heart: it will be generally found that either pericarditis and endocarditis, or both, are present.

CASE 17.—*Pericarditis and endocarditis, in association with rheumatism; considerable effusion into the pericardium; probably adhesions of the pericardium to the surface of the heart; aortic valvular disease.*

Coopah Moota, a Hindoo, 20 years of age, an Oil-seller by occupation, of temperate habits, a native of Marwar, but resident in Bombay for four years. Ten years before he came under observation he was affected with pain and swelling of the large joints, from which he recovered. Again, three months before admission, he was attacked with swelling and pain of the large joints, with fever. The swelling and febrile symptoms left him, but there was pain of the knees, ankles, and elbows, when he was admitted into the clinical ward, on the 25th of June 1852. He was much reduced, and the countenance was anxious; the skin was slightly above the natural temperature, and the pulse was small, frequent, and soft. Slight fulness was observed at the præcordial region, but there was no pain complained of there. The action of the heart was tumultuous, and a purring tremor was distinct. The præcordial dulness extended in the line of the sternum and left costal cartilages from the 2nd to the 6th rib, and transversely from the middle of the sternum to the left nipple. At the 2nd and 3rd left costal cartilages there was a loud superficial friction murmur, obscuring both sounds of the heart,—it became very faint at the apex, and there both the sounds of the heart were audible, as well as in the line of the sternum at the level of the 6th rib. No abnormal pulmonary sounds. Abdominal functions natural, and the tongue clean and moist. A blister was applied to the præcordial region. Pulv. Doveri grs. 5, ipecacuan gr. 1, nitrat. potass. grs. 8, were given every fourth hour, also liquor potassæ ʒi and sesquicarb. ammoniæ grs. 6, every fourth hour. This treatment was steadily continued: the action of the heart became calmer, and the pains of the joints decreased. On the

29th the friction murmur was noticed in the interscapular region, and below the inferior angles of both scapulæ. On the 9th July he was urgent for his discharge, as he considered himself well. The purring tremor was gone; the action of the heart was calm; the præcordial dulness extended from the lower border of the 3rd left costal cartilage to the 6th rib, and reached externally to about an inch and a half internal to the nipple. The friction murmur was still present at the 2nd and 3rd costal cartilages, but was not audible at the apex. It was still heard, though more faintly than before, in the interscapular region, and at the inferior angles of the scapulæ. The urine was tested several times, and showed no traces of albumen. On being sent for, he came to the hospital for examination on the 26th July. His appearance was much as when he left. The impulse of the heart was somewhat greater than natural, and attended with an occasional jogging movement. There was no dulness on percussion above the left 4th costal cartilages, and none externally beyond a point half an inch internal to the nipple, but at the level of the 4th rib the dulness extended to the right beyond the middle of the sternum. Over the sternum, at the level of the 3rd costal cartilage, there was a superficial friction sound, limited to that spot. At the 4th left costal cartilage there was a faint systolic murmur, and the friction murmur faintly mixed with it. At the apex there was sharper than normal first sound, but no murmur. In the interscapular regions the heart sounds were heard faintly, but there was no murmur. The pulse was rather small. Was again examined on the 4th August. The action of the heart was calmer; the friction sound was still audible at the 3rd costal cartilage, but was fainter,—a systolic murmur mixed with it; no murmur at the apex, which beat between the 4th and 5th ribs. There was no increase of the præcordial dulness,—it was normal.

Remarks.—There was evidently in this case serous effusion, and lymph exudation into the pericardium, the former disappearing by absorption, the latter leading to adhesion between the surfaces. How long the friction murmur was present before admission was not known, but we have it, though gradually

decreasing, still present a month after he came under observation,—another illustration of the fact that even in cases in which adhesion takes place, a very considerable time elapses before the friction murmur disappears.

Case 18.—*Pericarditis, in association with a state of general cachexia.*

Shaik Kadur, aged 45, a Mussulman Dyer, was admitted into the hospital on the 21st November 1850, under the head "Cachexia." He was emaciated, had œdematous feet, and was affected with diarrhœa. He died on the 22nd. On examining the body after death, the surface of the heart was found covered with membranous layers of lymph, which were easily peeled off, showing a dotted red surface underneath.

The disease had not been suspected during life, and had not been looked for.

Remarks.—This case is unsatisfactory, from its meagre history. It was in one of the general wards of the hospital, and the existence of pericarditis was discovered after death, on examining the body. The notes of the dissection are also imperfect: there is no notice of the state of the kidneys.

Case 19.—*Pericarditis, in association with pneumonia.*

Case 20.—*Pericarditis, in association with syphilitic cachexia.*

In December 1848 the existence of pericarditis was discovered in two patients who died in the general wards of the hospital. The disease was not suspected during life. In both the surfaces of the heart, and the lining of the pericardium, were found after death coated with flocculent lymph. In one the disease existed in association with pneumonia, and in the other occurred towards the close of syphilitic cachexia. In neither were symptoms of rheumatism present.

Remarks.—These are very meagre cases, and are chiefly introduced as instances of pericarditis, independent of rheumatism,—the first from extension of inflammation from the lung to the pericardium; the other occurring in a state of syphilitic cachexia. In neither was the pericarditis suspected to be present

during life. Cases such as these may be overlooked from the latency of the symptoms, and render it probable that the disease is more frequent than the cases now recorded by me would seem to indicate.

CASE 21.—*Pericarditis, indicated by general and local symptoms, not by physical signs; not connected with rheumatism. Removed by leeching, blisters, and mild mercurial influence.*

Dewjee Madoojee, a Hindoo Peon, 30 years of age, an inhabitant of Malwan, and four years resident in Bombay, was admitted into the clinical ward of the Jamsetjee Jejeebhoy Hospital on the 16th December 1848. Two months previously he had suffered from cough, which abated, and was succeeded by dysenteric symptoms. He never was the subject of rheumatism. On admission, there was anxiety of countenance; the breathing was hurried, and chiefly abdominal; and there was fluttering pulsation evident at the epigastrium. He pointed to the abdomen generally, but chiefly to the left hypochondrium, as the seat of uneasiness; and he described the pain as extending upwards to the left side of the chest, and as being increased by lying on the left side. There was hardly any increased præcordial dulness; the sounds of the heart were confused, but there was no murmur; the pulse was 115, small, and irregular; there was slight heat of skin. These symptoms he described as having come gradually on subsequent to the dysenteric affection, by extension of the pain from the abdomen to the chest. Four dozen leeches were applied to the præcordial region, followed by a blister, and the exhibition of calomel and opium. The pulse fell to 96, became more developed, and the pain was removed. On the 22nd November the gums began to swell, and dysenteric symptoms to be complained of. On the 25th, præcordial pain, without any murmur, but with sub-crepitous rale, at the left mammary region, was again complained of, and leeches and a blister were again applied, with relief. On the 1st December, and the three or four subsequent days, pain in the lumbar region was complained of. The urine was several times tested, and always found free of albumen. Subsequently he had occasional febrile symptoms,

with crepitus in the right dorsal region, and puffiness of the face, with feeble pulse. He was removed by his friends to Malwan on the 8th January, at which time the sounds of the heart were natural, no increased impulse or præcordial dulness ; the pulse of moderate strength ; the lumbar and abdominal pain gone, and the puffiness of face less.

Remarks.—Though in this case there was no friction sound made out to my own satisfaction, yet the character and situation of the pain, and the state of the pulse, were very indicative of pericarditis, not, so far as the history went, dependent on a rheumatic diathesis, yet one in which alternating inflammatory action was well marked, without the cause being apparent.

CASE 22.—*Phthisis pulmonalis ; secondary pericarditis ; friction murmur, distinct for twenty days. Death eighteen months afterwards : firm pericardial adhesions ; Bright's disease of the kidney.*

Kannyah, a Hindoo Baker, 32 years of age, a native of Bangalore, and lately arrived in Bombay from Poona, was admitted after eleven days' illness into the clinical ward, on the 27th September 1849. He was reduced in flesh, and the respiration was short and hurried. The whole of the right side of the chest was dull on percussion, the dulness increasing from above downwards. In places there was crepitous rale, in others bronchial respiration. He continued under treatment till the 11th December. There were febrile symptoms, with evening exacerbations ; the sputa, at first in part rusty and adhesive, frothy and clear, subsequently became opaque, and were expectorated in detached masses. The dulness on the right side and bronchial respiration continued for some time unchanged, but at the period of his discharge had considerably lessened. During his stay crepitus was heard also in the left dorsal region.

He was re-admitted on the 14th June 1850. He had improved in health after leaving the hospital, till five days before his re-admission, when, consequent on exposure to cold, he had a return of febrile symptoms, cough, and dyspnœa. There was dulness, with large crepitus, and bronchial respiration in the left

mammary, lateral, dorsal, and scapular regions. On the right side crepitus was also audible, but nothing is noted regarding the resonance on percussion. The sounds and rhythm of the heart were natural. He continued suffering from febrile and pulmonic symptoms till the 23rd June, when a distinct friction murmur, synchronous with the heart's action, and obscuring the sounds, was heard between the left nipple and the sternum. The pulse was frequent and jerking. The murmur continued distinct till the 13th July, when it ceased, and there was left some degree of roughness and shortness of the first sound. On the 3rd August, and for some time afterwards, the impulse of the heart was distinct between the 3rd and 4th left costal cartilages, and it was not perceptible below the nipple. The febrile and pulmonic symptoms continued, but became less in severity; the dulness and bronchial respiration of the left side lessened in degree, and he was discharged in improved health on the 20th September. He continued in tolerable health for about a year, when he began again to suffer from cough and febrile symptoms, and was re-admitted into the clinical ward on the 6th January 1852. He was a good deal emaciated; the respiration was short and hurried; there was dulness on percussion of the right scapular and dorsal regions, but undue resonance of the subclavian region;—in all these regions there was blowing respiration, and increased resonance of voice. The left subclavian and axillary regions were somewhat dull on percussion; and there was bronchial respiration mixing with occasional sub-crepitous rale. There was no increased præcordial dulness, and nothing abnormal was detected in the sounds and impulse of the heart. There was dulness on percussion for an inch and a half below the margin of the right false ribs, and some uneasiness on pressure there. He complained of frequent cough, the sputa were copious, puriform, and in detached masses; the pulse was small and frequent. There was no diarrhœa. He died on the 10th January. During his second admission, the urine gave no traces of albumen on the one occasion on which it was examined. During his last admission it was examined on the 9th January, when it was stated

to be 20 ounces in quantity, of brown colour, specific gravity 1.035, giving a deposit under heat and nitric acid, which became of a brown colour.

Inspection fourteen hours after death.—Head.—The vessels of the piamater were congested, and about two ounces of serous fluid were found at the base of the skull.

Chest.—The mucous membrane of the trachea presented here and there a blush of redness. There were also small red points on that of the larynx. The lobes of the right lung were firmly adherent to each other. The two upper ones were completely solidified by aggregation of crude tubercles. About an inch and a half below the apex of the upper lobe, and near to its posterior surface, there was a cavity the size of a large pigeon's egg, lined by a smooth membrane. The inferior lobe, also, had scattered crude tubercles, with intercurrent sanguineous engorgement. Both lobes of the left lung were more or less solidified, but the upper one most so, from tubercular deposit: there was no cavity. The internal surface of the pericardium was firmly, closely, and generally adherent to the outer surface of the heart. The left ventricle of the heart was slightly dilated, but there was no hypertrophy of its walls. The valves of both sides were healthy.

Abdomen.—The external appearance and size of the liver were natural. When incised, it was found to be congested in the second stage. The spleen was healthy; both kidneys were slightly enlarged, somewhat lobulated, mottled red and pale yellow, and finely granular externally; their incised surfaces were in general pale. The cortical portion of both was somewhat enlarged and encroached upon the tubular. These changes were most marked in the left kidney. The stomach and intestines were not examined.

Remarks.—This case presents many points of interest. There was first the opportunity of watching the patient during nine months of signs indicating tubercular deposit in the upper part of both lungs. Then succeeded pericarditis, with a friction murmur audible for twenty days; then disappearing, and leaving the heart, consequent on the pericardial adhesions that had

taken place, with the impulse perceptible between the 3rd and 4th ribs. In thirteen months afterwards, the patient again came under treatment, and died. The tubercular condition of the lungs is verified; firm adhesions connect the pericardium to the heart, and there is found also Bright's disease of the kidney. The urine had been very superficially observed, but on the occasion of his last admission was distinctly albuminous.

CASE 23.—*Asthenic pneumonia, leading to red induration of the upper lobes. In its course, pericarditis and endocarditis of the left ventricle, and auricle, causing structural disease of the mitral valve; not traced to rheumatism; dilatation of all the cavities of the heart.*

Sebastian Fernandez, a native of Goa, 31 years of age, following the occupation of a Servant, and using spirituous liquors, was admitted into the clinical ward on the 15th July 1850. He was a good deal reduced, had been under treatment in the hospital a month before for cough, from which on previous occasions he had also suffered. Subsequent to his discharge from hospital, and about fifteen days before his second admission, the cough had become more troublesome, and for the last eight days had been attended with febrile symptoms, coming on with chills at irregular times, and terminating with sweating; and the sputa had been tinged with blood. The respiration on admission was observed to be slightly hurried, and there was some degree of dulness on percussion of the left subclavian region, and the general character of the respiration there, as well as in the left scapular region, was more bronchial than normal. Sonorous and sibilous rales were heard in different parts of the chest, but no other abnormal pulmonic signs were noted. The sounds and impulse of the heart were natural; tongue clean and moist; no fulness or induration of the abdomen. Pulse soft, and of moderate volume. He complained of cough, with scanty mucous expectoration. He continued suffering from cough—the physical signs unchanged—occasional accessions of fever, and slight dysenteric symptoms, with a pulse decreasing in strength, till the 3rd July, when, for the first time, some degree of preternatural

præcordial dulness was observed. The dulness extended from the 3rd to the 5th ribs, and from the left margin of the sternum to the nipple. On the 4th costal cartilage, internal to the nipple, both sounds of the heart were distinct, and continued so in a direction upwards. About an inch below and external to the nipple there was a rough murmur, obscuring the first sound, but the second was tolerably clear. On moving the stethoscope downwards and outwards, about an inch and a half below and external to the nipple, the murmur became louder, and obscured both sounds of the heart. The features were contracted, and the pulse was scarcely perceptible. The bowels were relaxed, and he had vomited frequently. He continued under treatment till the 29th September, when he was transferred to another ward. During this period occasional febrile symptoms were present. The pulse was in general small, sometimes irritable. The action of the heart was increased; the præcordial dulness somewhat extended. The cardiac murmur continued as described, but latterly it was less rough, and somewhat fainter, and did not obscure both sounds. The pulmonic symptoms and signs continued, and there was more or less gastro-enteritic irritation present. The urine showed no traces of albumen. He was treated with stimulants, tonics, and anodynes, and small blisters applied to the præcordial region. Shortly afterwards he left the hospital, and was not again heard of till the 24th February 1851, when he again applied for admission, and was received into the clinical ward. He complained chiefly of discomfort and distension of the abdomen after eating, and the breathing was hurried. There was dulness on percussion of the right subclavian and axillary regions noted, with a bronchial character of the respiration there, as well as in the left subclavian and scapular regions. The præcordial dulness extended from the 3rd rib to the margin of the left false ribs, and transversely from the right margin of the sternum to half an inch external to the nipple. The action of the heart was increased. A little internal to the nipple there was a blowing systolic murmur, becoming more audible in a direction downwards, but gradually disappearing in a direction upwards. The second sound of the heart was distinct. The

pulse was small and feeble. The dyspnœa increased, the pulse became feeble, and he died on the 5th March.

Inspection twelve hours after death.—Chest.—The lungs did not collapse on opening the chest. The left lung adhered firmly to the costal pleura throughout its entire extent. There was no pleuritic effusion. The greater part of the upper lobe of the lung was in a state of red induration; the lower lobe was somewhat condensed, and a good deal of frothy serum oozed out when it was cut. The right lung was unconnected by abnormal adhesion to the costal pleura, and there was no pleuritic effusion. The upper lobe was in a state of red induration, similar to that of the left side, but rather less in degree. The posterior part of the 3rd lobe was also condensed, and the anterior crepitated feebly. The bronchial tubes were filled with frothy serum, and the mucus membrane was red. The heart extended from the 3rd to the 7th left rib. There was no fluid in the sac of the pericardium. Opaque thickened patches existed on the surface of the heart, chiefly that of the right ventricle. The cavity of the left ventricle was dilated, but the walls were of natural thickness; the mitral valve was considerably thickened, and the auriculo-ventricular opening was so contracted as not to allow the point of the little finger to pass through. The free margins of the aortic semi-lunar valves were thickened. The left auricle was also dilated, and its lining membrane presented an opaque thickened appearance throughout, with granular effusion here and there, in patches. There was considerable dilatation of the right auricle and ventricle, and they contained firm fibrinous coagula.

Abdomen.—The liver rather smaller than natural, but healthy in structure. The kidneys healthy.

Remarks.—This case was interesting and obscure, both as regards the affection of the lungs and the heart. The former was suspected during life to be tubercular in character, but it was a chronic asthenic pneumonia. In its course pericarditis and endocarditis came on, and we are able with confidence to fix on the period of their accession, the 31st July. The morbid condition of the heart, valves, endocardium and pericardium, took place, then, during the seven months preceding his death. In

regard to the cardiac murmur, it was, I believe, exocardial in the first instance, gradually disappearing as the lymph patches on the surface of the heart became organized, and being replaced by an endocardial mitral murmur, as the valve became structurally more changed.

CASE 24.—*Empyema of the right side of chest; secondary pericarditis; friction murmur; lymph effusions found after death.*

Minguel Rozario, aged 35, a native of Goa, and following the occupation of a Cook. He had been in bad health for some time before his admission into the Jamsetjee Jejeebhoy Hospital, on the 23rd July 1852. He was affected with cough, and with dyspnœa, and the indurated edge of the liver projected for two or three inches below the margin of the right ribs. The dyspnœa increased, and there were occasional febrile symptoms, and on the 13th August a distinct friction murmur was perceived in the præcordial region, best heard at the apex; there was slight increase of the præcordial dulness; the face became puffed, the feet and hands œdematous, and he died on the 19th.

Inspection thirteen hours after death.—Chest.—The right sac of the pleura contained several pints of purulent effusion; the lung was compressed, and the liver was displaced downwards. The surfaces of the pleura were covered with flaky lymph. The left lung was healthy. The pericardium contained about eight ounces of blood-tinged serum, and flakes and shreds of lymph adhered generally to its inner surface. The heart was of natural size, and there was no disease of the valves.

Remarks.—For this case I am indebted to Dr. Haines, under whose care the patient was. I had not an opportunity of seeing him during life, nor the morbid appearances after death.

CASE 25.—*Acute arachnitis and pericarditis, leading to considerable effusions, coagulating into a jelly-like mass when removed from the body; friction murmur. In a pregnant female.*

Joomkee, a Hindoo female, a Beggar, 30 years of age, was

brought to the Jamsetjee Jejeebhoy Hospital on the evening of the 9th August 1852. She had been found alone in a house by the police, and was believed to have been ill for several days. She was quite comatose, and the pupils were dilated; the skin was somewhat above the natural temperature; the breathing was hurried; the pulse was small and frequent. The upper limit of the præcordial dulness was the lower border of the 2nd left rib, the lower limit was the upper border of the 6th rib; the inner the middle of the sternum, and the outer a vertical line drawn along the outer border of the nipple. The impulse of the heart was increased, and a thrilling sensation was communicated to the hand when placed on the præcordial region. The action of the heart was tumultuous, and the sounds confused. There was distinct induration below the left false ribs. She was in about the sixth month of pregnancy, and the fœtal pulsations were audible to the left of the fundus of the uterus. During the 10th the coma continued; the pulse became feebler; the breathing more hurried, and at the evening visit a friction murmur was heard at the 2nd left costal cartilage, but not at the apex—there the sounds were still confused. She died early on the morning of the 11th.

Inspection three hours after death.—Head.—About eight* ounces of fluid flowed from the cavity of the arachnoid and base of the skull, and it speedily coagulated into a jelly-like mass. It was of red colour, but this was probably due to some admixture of blood which had escaped from the sinuses, wounded in removing the dura mater. There was no increased vascularity of the membranes, or redness of the substance of the brain. The ventricles were empty.

Chest.—The diaphragm rose high in the chest. The lungs showed no traces of disease. The pericardium was distended, and occupied a space extending from the 1st to the 5th left rib, reached to the right border of the sternum, and on the left side half an inch beyond the nipple. It contained about twelve

* The character of the cerebral effusion is the only fact in this case not witnessed by myself. I am indebted to Mr. Sub-Assistant Surgeon Carvalho for the statement. The heart and pericardial effusion were seen by me.

ounces of clear greenish fluid, which speedily coagulated into a tremulous jelly-like mass. There was no vascularity of any part of the inner surface of the pericardium, or outer surface of the heart, and no trace of lymph deposit. The endocardium, the valves, and muscular tissue of the heart, presented no appearance of disease, unless a greater degree than usual of redness of the muscular structure may be so considered. There was no dilatation of any of the cavities, and they contained little blood, and no fibrinous coagula. The spleen was considerably enlarged. The liver was of natural size, and healthy. Both kidneys were somewhat larger than natural, but their structure was healthy. The gravid uterus extended as high as the umbilicus, and contained twins between the fifth and sixth months.

Remarks.—There are many points of interest in this case. We cannot regard the effusions into the cavities of the arachnoid and the pericardium in the light of dropsies, in the usual acceptation of the term. They were good illustrations of what Vogel designates fibrinous dropsies, but by this term I understand him to mean nothing else than the exudation of liquor sanguinis, which takes place from serous surfaces in the early stage of inflammation. The case, then, seems to me to have been one of acute arachnitis and pericarditis conjoined, fatal at an early period, with an unusual amount of liquid effusions, and with absence of increased redness, because the inflammation had been in its early stage, and had not as yet caused much stagnation of blood in the capillaries. It is generally admitted that the fibrinous deposits found on serous surfaces as the product of inflammation have been at the time of exudation, and probably for some time afterwards, in solution in the liquor sanguinis,—in the condition, in fact, in which the fibrine exists in the liquor sanguinis within the blood-vessels. We find it after death in deposits on the serous surfaces, because, in general, the exudation of the liquor sanguinis has preceded death by many days, and the serum is in course of removal, and the fibrine has been deposited with the view to organization. We sometimes find it in the form of tremulous jelly-like masses—we rarely find it, as in this case, fluid, and not coagulating till removed from the body.

But have we not, in the early period at which the body was examined after death, an explanation of the liquid state of the effusion—and is it not probable, that had the usual period elapsed before the examination, the coagulation would then have been found to have taken place? And may we not from this infer that it is probable that the lymph exudations of serous inflammation continue in the liquid state for some time during life, and would be found more frequently in this state after death, were it not that in general ample time is allowed for the coagulation to take place between the period of death and the time of the *post-mortem* examination?

Twelve hours before death a friction sound was distinct over the 2nd left rib and intercostal space. This was first noted by myself, and carefully observed, and was heard also by several of the advanced students who were present. I can entertain no doubt, then, in regard to the existence of the friction sound at this time.* But how is its presence to be explained? There was no roughening of the surfaces by lymph deposits; there was, moreover, considerable liquid effusion in the sac of the pericardium. If correctly observed, it implies (though how to explain it I do not pretend to suggest) that in effusions with the fibrine yet in solution, we have conditions adequate to cause this murmur of pericarditis. In order to explain the occurrence of a pericardial murmur very early in pericarditis, it has been suggested that the lymph close upon its exudation must become concrete, and roughen the surfaces; but, if this case be true, then this concretion of the lymph is not necessary to the production of the murmur: it further supports the view that this murmur may be present when the exudations are yet in that state which admit of complete removal by absorption. This question, then, in regard to the murmur, is certainly one which should be kept in view; yet, on after reflection, it does not escape me that the murmur, having been audible chiefly at the 2nd left costal cartilage, may be explained by compression of

* These remarks were written after the occurrence of the case, when its facts were fresh in my mind.

the effusion on the commencement of the large vessels, diminishing their calibre, and thus giving rise to an abnormal sound.

PART II.

ON ORGANIC DISEASE OF THE HEART AND AORTA.

The second part of this report consists of the history of twenty-one cases in which there was structural disease of the heart, and three cases of aneurism of the aorta. The important facts relative to these cases may be arranged under the following heads:—

I. The nature and situation of the structural change.
II. Relation to difference of Sex.
III. The proportion of cases in the different Castes.
IV. Classification with reference to age.
V. The different occupations of those affected.
VI. Relation to habits of life.
VII. Relation to the months of the year.
VIII. Relation of the structural changes to pericarditis, endocarditis, and rheumatism.
IX. Relation to Bright's disease of the kidney.
X. The leading symptoms and signs, treated of under the following heads:—
    1. Dyspnœa.
    2. Dropsy.
    3. Præcordial pain.
    4. Pain below the margin of the right ribs.
    5. Scapular pain.
    6. Character of the pulse.
    7. Præcordial fulness.
    8. Increased impulse of the heart.
    9. Præcordial dulness.
    10. Dulness below the margin of the right ribs.
    11. Character of the murmurs.
    12. Præcordial thrill.
XI. On medical treatment.

I.

The Nature and Situation of the Structural Changes.

Of the twenty-four cases, seventeen proved fatal in hospital, and two, in all probability, shortly after discharge. Of the seventeen fatal cases an examination of the body after death was made in sixteen. Let us first notice the structural changes that existed in the seventeen fatal cases.

In eleven* there was *dilatation of both ventricles of the heart;* in six, associated with disease of both aortic and mitral valves; in four with disease of the mitral valves, and in one with disease of the aortic valve alone.

In nine† there was *dilatation and hypertrophy of the left ventricle.* In these, with two exceptions, there was dilatation of the right ventricle also; in five of the cases there was disease of both the aortic and mitral valves; in three disease of the mitral valve; in one of the aortic valve only.

In one case‡ there was *hypertrophy of the right ventricle,* associated with obstructive disease of the pulmonary semi-lunar valves.

In four§ cases there was *aneurism of the left ventricle.* In all the opaque state of the endocardium showed that endocarditis had at a former period been present, and was in all probability the cause of the atrophy and impaired irritability of the muscular fibre, which had led to the formation of the aneurismal pouches. In three of the cases, there was disease of the mitral valve, in one of the aortic valve alone.

In seven‖ there was both *aortic* and *mitral valvular disease.*

In five¶ disease of the *mitral valve* only.

In one** disease of the *aortic valve* only.

In one†† disease of the *pulmonary semi-lunar valves.*

The co-existences of dilatation of both or one of the ventricles of the heart, with their several states of valvular disease, has already been shown.

* Cases 26, 27, 28, 29, 30, 32, 37, 38, 39, 40, 41.

† Cases 26, 27, 28, 30, 31, 33, 37, 39, 40.

‡ Case 44.

§ Cases 26, 29, 30, 33.

‖ Cases 27, 28, 31, 37, 38, 40, 41.

¶ Cases 29, 30, 32, 33, 39.

** Case 26.

†† Case 44.

In nine* cases the existence of former pericarditis was proved by the presence of *opaque patches on the surface of the heart;* and in two† of these there were also adhesions between the pericardium and the surface of the heart.

In six‡ cases, there was in the *opaque condition of the endocardium* of the left ventricle evidence of the previous existence of endocarditis.

Both the pericardium and endocardium had been affected in five cases.

In five§ cases there was *effusion of serum* exceeding two ounces, in the sac of the pericardium.

In one‖ case *rupture of the left ventricle of the heart* had taken place: the muscular fibre had in this case undergone the *fatty degeneration.*

In two¶ cases there was *dilatation* of the ascending portion of the aorta, and in two** the aorta was *contracted.* In three†† there were thickened patches *of a theromatous deposit* on the inner surfaces of the aorta.

In one‡‡ case there was *aneurism* of the thoracic aorta, and in one§§ aneurism of the abdominal aorta.

Of the sixteen cases examined after death, the state of the *lungs* is not mentioned in the report of two‖‖ of the cases. In six¶¶ cases there was *congestion* of part of the lungs: five of these were cases in which there was dilatation of both ventricles—one dilatation and hypertrophy of the left ventricle. In four*** cases there was *œdema* of the lungs, and in all dilatation of both ventricles was present. In four††† cases there was more or less serous effusion into the sacs of the pleura, and these were also cases in which there was dilatation of both ventricles,—in three of the cases the pleural effusion was associated with œdema of the lungs. In five‡‡‡ cases old pleural

* Cases 26, 27, 29, 30, 31, 32, 33, 37, 40.
† Cases 26, 29.
‡ Cases 26, 28, 29, 30, 32, 33.
§ Cases 27, 31, 33, 39, 40.
‖ Case 46.
¶ Cases 31, 48.
** Cases 37, 40.
†† Cases 31, 40, 41.
‡‡ Case 48.
§§ Case 47.
‖‖ Cases 26, 47.
¶¶ Cases 27, 28, 31, 37, 39, 40.
*** Cases 32, 38, 40, 41.
††† Cases 29, 32, 38, 41.
‡‡‡ Cases 30, 32, 37, 38, 41.

adhesions existed. In two* cases there were *hepatized nodules* here and there in the substance of the lungs. In one† case *tubercles* existed, in one‡ *emphysema*. In one§ the lungs were reported to be healthy. In these cases we find the relation between congestion of the lungs, serous effusion into the sacs of the pleura, or into the pulmonary air cells, and heart disease, well illustrated.

Cases not fatal in Hospital.—There were seven cases of this class : two,‖ as already stated, were believed to prove fatal shortly after the patients were discharged.

Of these seven cases, in two¶ there was hypertrophy and dilatation of the left ventricle of the heart.

In four** there was mitral valvular disease ; in one†† aortic valvular disease ; in one‡‡ disease of the tricuspid valve ; in one§§ aneurism of the arch of the aorta.

II.

Relation to difference of Sex.

Of the twenty-four cases, there are only three‖‖ females. The observations made under this head, in reference to pericarditis and endocarditis, are equally applicable to the present division of the subject.

III.

The Proportion of Cases in the different Castes.

Of the twenty-four cases, twelve¶¶ occurred in Hindoos, eight*** in Mussulmans, four††† in Christians, and none in Parsees. On comparing this statement with the corresponding one in the first part of these notes, it will be observed that the proportions stated relative to Hindoos and Christians are very similar, but those regarding Mussulmans and Parsees are altogether opposed. This result makes it evident that the data

* Cases 27, 48. † Case 29. ‡ Case 44. § Case 33. ‖ Cases 36, 42.
¶ Cases 45, 49. ** Cases 35, 36, 42, 43. †† Case 34. ‡‡ Case 45.
§§ Case 49. ‖‖ Cases 26, 33, 35.
¶¶ Cases 26, 27, 31, 32, 33, 37, 39, 40, 42, 44, 45, 47.
*** Cases 28, 29, 30, 36, 38, 41, 48, 49. ††† Cases 34, 35, 43, 46.

are too limited to justify any general conclusion being drawn from them, on this point.

IV.

Classification with reference to Age.

The ages were as follows:—

From 10 to 20	....	3 *
„ 21 to 30	....	7 †
„ 31 to 40	....	9 ‡
„ 41 to 50	....	3 §
„ 51 to 60	....	1 ‖
„ 61 to 70	....	1 ¶
		24

The lowest age was 14, and the highest 65. Between the ages of 14 and 30 there were ten cases, and of these four were in individuals who were reported to have suffered from rheumatism; between the ages of 31 and 40 there were nine cases, and of these four had been affected with rheumatism; between the ages of 41 and 50 there were three cases, and of these one had suffered from rheumatism; and of the two cases between 51 and 65, one had also been affected with rheumatism.

When we compare this statement with that under the same head relative to pericarditis and endocarditis, we find that in the present, the range is considerably more extensive—it is between the ages of 14 and 65 instead of 17 and 50. We observe, also, that the cases below 20 are considerably fewer—less than one-half; that between 21 and 30 they are also less numerous, but between 31 and 40 the proportion is more than double.

Of the twenty-four cases, sixteen occurred between the ages of 21 and 40, and of these, eight (one-half) had suffered from rheumatism; of the remaining eight cases, two (one-fourth) had suffered from rheumatism.

* Cases 35, 43, 44.

† Cases 27, 28, 36, 37, 39, 40, 45.

‡ Cases 26, 29, 31, 32, 33, 41, 42, 47, 49.

§ Cases 30, 38, 48.

‖ Case 46.

¶ Case 34.

V.

The different Occupations of the affected.

Excluding the three females, and three whose occupations are not mentioned, the remaining may be classed in the following manner :—

Sailors.....	6 *	Servant.....	1 ‖
Labourers.....	4 †	Beggar.....	1 ¶
Horsekeepers.....	2 ‡	Plasterer.....	1 **
Washermen.....	2 §	Tailor.....	1 ††
	14		4=18

There may be observed in this statement the same relation between probable exposure to cold and wet and heart affections, as was noted relative to these influences, and pericarditis and endocarditis—the reason is evident. But there is another point of interest relative to the etiology of heart disease, which is also illustrated in this statement—the frequency of the affection in individuals whose occupations require active muscular exertion. Of the eighteen cases, the fourteen in the first column were thus circumstanced, and it is worthy of note that of the three cases of aortic aneurism, two occurred in washermen,§§ the third in a sailor.

VI.

Relation to Habits of Life.

The habits of nine only are mentioned : of these four were not addicted to the use of spirits, but five|||| were ; three of them were Hindoos and two Mussulmans.

* Cases 28, 29, 38, 41, 46, 48.
† Cases 27, 31, 32, 34.
‡ Cases 30, 37.
§ Cases 47, 49.
‖ Case 36.
¶ Case 44.
** Case 40.
†† Case 45.

§§ It is unnecessary to state for the information of the Indian reader, but it may be for that of the European, that the system of clothes-washing in India necessitates considerable muscular exertion of the arms and upper parts of the body.

|||| Cases 27, 28, 30, 37, 47.

VII.

Relation to the Months of the Year.

The admissions occurred in the following months :—

	Cases.		Cases.
2 January.....	35, 48	2 July.....	32, 42
2 February.....	34, 40	3 August....	27, 28, 33
3 March.....	41, 46, 47	2 September	43, 44
1 April.....	45	October..	....
May.....	....	3 November.	29, 37, 38
2 June.....	31, 36	4 December.	26, 30, 39, 49.

As regards the structural disease of the heart itself, it is not probable that we shall find any relation between admission into hospital and the season of the year; but when we recollect that admission is generally sought for relief from the secondary affections, dropsical effusions, and bronchitic attacks, we may be prepared to find the same relation between cold and wet and admission for heart disease, that we find to obtain between these states of the weather and pericarditis and endocarditis. This statement confirms such expectation : eleven cases were admitted in the cold months of November, December, January, and February, and nine in the wet months of June, July, August, and September; in the hot months of April, May, and October only one case was admitted.

VIII.

Relation of the Structural Changes to Pericarditis, Endocarditis, and Rheumatism.

Excluding the three cases of aortic aneurism, and confining the observations to the twenty-one cases of heart disease, it will be observed that the fact of rheumatism having been suffered from or not, at some former period, is stated of fourteen cases; of these ten* had suffered from rheumatism; four † had never experienced an attack of that disease.

IX.

Relation to Bright's Disease of the Kidney.

There are sixteen cases in which examination of the body after

* Cases 26, 27, 30, 31, 32, 33, 34, 35, 36, 44.

† Cases 29, 37, 42, 43.

death was made: in seven of them the condition of the kidneys is not mentioned; of the nine remaining cases, in five* the kidneys were healthy; in four† there was some degree of Bright's disease, but in none had it proceeded to any great extent. This statement, so far as it goes, shows a more frequent association of structural disease of the heart and Bright's disease than the corresponding one in the first part of these notes did between this affection of the kidney and pericarditis and endocarditis. But the data are too limited to justify importance on these points being attached to them.

X.

The leading Symptoms and Signs.

Dyspnœa.—The breathing was somewhat short and hurried in sixteen‡ cases. Of these, twelve were fatal, and in ten§ there was dilatation of both ventricles; in one‖ dilatation and hypertrophy of the left ventricle; in one¶ hypertrophy of the right ventricle. In three of the fatal cases the lungs were after death found more or less congested; in four there was œdema of the lungs; in one pleural effusion; in one emphysema; in one old pleuritic adhesions; in one the lungs were reported to be healthy, and in one there was no note of the appearances. In eight of the twelve cases, then, we have the dyspnœa accounted for by the presence of congestion, or serous effusion.

Of the four cases of which the issue was not fatal, there was in two,** it was believed, dilatation and hypertrophy of the left ventricle, and disease of the mitral valves; in one†† there was disease of the aortic valves; in another‡‡ of the tricuspid valves.

From this statement, then, it would appear that we have dyspnœa generally associated with dilatation of the ventricles, and consequent congestion and œdema of the lungs.

Dropsical symptoms were more or less present in eleven§§

* Cases 27, 29, 38, 39, 40. † Cases 28, 30, 31, 37.

‡ Cases 26, 27, 28, 29, 30, 32, 33, 34, 36, 38, 39, 40, 41, 42, 44, 45.

§ Cases 26, 27, 28, 29, 30, 32, 38, 39, 40, 41. ‖ Case 33. ¶ Case 44.

** Cases 36, 42. †† Case 34. ‡‡ Case 45.

§§ Cases 26, 27, 28, 30, 31, 32, 33, 36, 38, 40, 42.

cases; of these nine* were fatal; in eight† of them dilatation of both ventricles; in one‡ dilatation and hypertrophy of the left ventricle was found after death. In the two§ cases that were not fatal there was dilatation and hypertrophy of the left ventricle, and disease of the mitral valve.

We find, then, in this statement, a close relation between dropsical symptoms and conditions of the heart, that must involve more or less systemic venous obstruction.

Præcordial pain was not noted in any case.

Pain below the margin of the right ribs was present in six‖ cases, and was attended with dulness on percussion in the same situation. In four of the cases there was dilatation of both ventricles, and in two dilatation and hypertrophy of the left ventricle. The pain and abnormal dulness were undoubtedly owing to congestion of the liver.

These symptoms are practically important from the risk that exists of their being mistaken, under superficial examination, for the symptoms of hepatic inflammation. This mistake was made in one¶ case, and I am satisfied that the caution now given is not uncalled for.

Scapular pain was present in one** case, in which aneurism of the left ventricle was found after death.

Character of the Pulse.—The state of the pulse is distinctly noted in thirteen cases.

In eleven†† it was *small:* of these, there was disease of the mitral valve alone in five‡‡; disease of both aortic and mitral valves in four§§; disease of the aortic valve alone in one ‖‖; and disease of the pulmonary semi-lunar valves in one.¶¶

The pulse was reported to be *irritable* in two cases: in one*** there was disease of both mitral and aortic valves—in the other††† there was disease of the mitral valve alone, and in this case the pulse was also at times characterized as small.

* Cases 26, 27, 28, 30, 31, 32, 33, 38, 40. † Cases 26, 27, 28, 30, 31, 32, 38, 40.
‡ Case 33. § Cases 26, 42. ‖ Cases 26, 27, 28, 31, 32, 33.
¶ Case 31. ** Case 29. †† Cases 26, 27, 29, 30, 31, 32, 33, 38, 40, 42, 44.
‡‡ Cases 29, 30, 32, 33, 42. §§ Cases 26, 31, 38, 40. ‖‖ Case 26.
¶¶ Case 44. *** Case 28. ††† Case 30.

The pulse was *jerking* in three cases: in one* there was disease of the mitral and aortic valves, and a diastolic aortic murmur was present. In this case the pulse was also at times characterized as small. In the other two† there was also mitral and aortic valvular disease, and diastolic aortic murmur.

The pulse was *intermitting* in one‡ case, and in this there was disease of the mitral valve alone. It was also small in character.

In two cases the pulse was *irregular:* in one§ there was aortic and mitral valvular disease; in the other‖ mitral disease alone.

From this statement, then, it appears that smallness is the character of the pulse generally met with in cardiac valvular disease, and that it may be held to indicate mitral regurgitation, or obstructive aortic valvular disease. In the three cases in which the pulse was jerking, the existence of aortic regurgitation was not only made clear, by the discovery of aortic valvular disease after death, but also by the presence of aortic diastolic murmur during life. In my observations on the pulse in the first part of these notes, I have pointed to the rarity of an intermitting pulse in pericarditis and endocarditis; and again, in the cases of structural disease, we find this character of pulse present only in one case. The pulse, then, has been noted to intermit in only two out of forty-nine cases of varied affections of the heart. It is therefore evident, that intermittence of the pulse is a symptom of little value in the diagnosis of heart disease.

Præcordial fulness was noted in only one¶ case, in which there was dilatation of both ventricles, hypertrophy of the left, and disease of the aortic and mitral valves.

There was *increased impulse* of the heart in ten** cases—of these eight were fatal: in six†† of them there was dilatation of both ventricles, and hypertrophy of the left; in one‡‡ dilatation of both ventricles, with aneurism of the left; and in one§§ hypertrophy of the right ventricle. In the two cases not fatal there was

* Case 31. † Cases 37, 41. ‡ Case 29.
§ Case 27. ‖ Case 42. ¶ Case 31.
** Cases 26, 27, 28, 29, 30, 34, 36, 37, 38, 44.
†† Cases 26, 27, 28, 30, 37, 38. ‡‡ Case 29. §§ Case 44.

probably, judging from the præcordial dulness, dilatation and hypertrophy of the left ventricle.

There was abnormal *præcordial dulness* noted in fifteen* cases: of these eleven proved fatal, and in eight† of them there was dilatation of both ventricles; in two‡ dilatation and hypertrophy of the left ventricle; in one§ hypertrophy of the right ventricle.

Of the three cases not fatal, there was in one‖ believed to be dilatation and hypertrophy of the left ventricle; in one¶ dilatation of the right ventricle, and in one** the dulness was very slight, and there was aortic valvular disease, with, probably, some degree of dilatation of the left ventricle.††

In nine cases there was *increased dulness below the margin of the right ribs.* Of these, seven cases were fatal: in five‡‡ of them there was dilatation of both ventricles, and in two§§ dilatation and hypertrophy of the left ventricle alone. In three of these cases the condition of the liver after death is not mentioned: in two it was increased in size, and the substance mottled red and white from congestion; in one there was the mottling, but no increase of size; in one there was no increase of size noted, but tendency to cirrhosis. Of the two‖‖ cases of hepatic dulness, not fatal, in one there was dilatation and hypertrophy of the left ventricle; in the other dilatation of the right ventricle. Under this head might also have been included a case¶¶ in which there was dulness below the margin of the right ribs, from displacement of the liver downwards, from pleuritic effusion.

* Cases 26, 27, 28, 29, 30, 31, 32, 33, 34, 36, 39, 40, 42, 44, 45.

† Cases 26, 27, 28, 29, 30, 32, 39, 40. ‡ Cases 31, 33.

§ Case 44. ‖ Case 36. ¶ Case 45. ** Case 34.

†† Not long since I called the attention of the Society to the fact that some degree of displacement of the heart upwards was not an infrequent consequence of enlargement of the spleen,—that then the upper limit of the præcordial dulness was at the 2nd left intercostal space, or the 3rd costal cartilage; and that sometimes the apex of the heart beat between the 4th and 5th ribs; that in consequence of the anœmia which is generally associated with splenic enlargement, an anœmic murmur is not an unlikely accompaniment of the abnormal præcordial dulness above adverted to; and that the murmur and dulness combined might lead an incautious observer into the belief that heart disease existed.

‡‡ Cases 26, 27, 28, 32, 38. §§ Cases 31, 33. ‖‖ Cases 42, 45. ¶¶ Case 41.

Character of the Murmur.—There was *a mitral systolic murmur alone* observed in seven* cases, and of these the issue was fatal in five. There was found after death in one† slight thickening of the mitral valve, and aneurismal dilatation close to it; in one‡ the mitral valve was thickened, and permitted regurgitation, and an aneurismal pouch existed between this valve and the apex of the heart; in one§ there was no thickening of the mitral valve, but the auriculo-ventricular opening was of greater than natural diameter, and must have permitted regurgitation; in one‖ the mitral valve was opaque and thickened, and an aneurismal pouch existed at the apex of the heart. In one¶ there was general thickening of the mitral valve, chiefly at the free margin, and with ossific deposits. In all these cases the aortic valves were healthy.

There was in two** cases a *mitral systolic and diastolic murmur:* the issue was fatal in one, and much thickening of the mitral valve was found after death. In this case there was also an aortic systolic murmur, and disease of the aortic valves.

There was a *mitral systolic and diastolic murmur, with both sounds of the heart audible at the base*, observed in two cases:†† one proved fatal,‡‡ and much ossific thickening of the mitral valve, and some degree of thickening of the aortic valves, were found after death.

There was *aortic systolic murmur alone* in one§§ case, which did not prove fatal.

Aortic systolic and diastolic murmur was present in four cases, and in all the issue was fatal. In one‖‖ the aortic valves were diseased, and the mitral healthy; in one¶¶ the aortic valves were much thickened, the mitral valve also, and in this case, as already mentioned, a mitral systolic and diastolic murmur was also present; in one*** there were warty-like deposits of lymph on the aortic valves,—there was also disease of the mitral valve, but no mitral murmur had been recognized during life; in one††† the aortic valves were thickened, and the orifice

* Cases 29, 30, 32, 33, 35, 39, 43. † Case 29. ‡ Case 30. § Case 32.
‖ Case 33. ¶ Case 39. ** Cases 31, 42. †† Cases 27, 36. ‡‡ Case 27.
§§ Case 34. ‖‖ Case 26. ¶¶ Case 31. *** Case 37. ††† Case 41.

patulous, and there was very slight disease of the mitral valve. In three of these cases the pulse was jerking ; in one it was small.

The sounds of the heart were confused, but no distinct murmur, in two* cases, both fatal: in one there was hypertrophy and dilatation of the left ventricle, with disease of the mitral and aortic valves,—but the murmurs were not heard, on account of the disturbed and laboured action of the heart. In the other there was considerable dilatation of the cavities of both sides, and some thickening of the aortic and mitral valves.

This statement, then, supports the opinions generally entertained in regard to cardiac murmurs. It shows the relation between murmurs best heard at the base, and aortic valvular disease, and that of murmurs best heard at the apex, and mitral valvular disease. The fact that a mitral murmur obscuring both sounds at the apex may co-exist with audible 1st and 2nd sounds at the base, was first taught me by case 27.† I am not acquainted with any writer on the physical signs of heart disease who states this fact, with the exception of Dr. Walshe. The case to which I have just referred occurred to me some time before the publication of this excellent work. The fact that a mitral murmur may co-exist with audible 1st and 2nd sounds at the base is not only of diagnostic value, but it seems to me rather to favour those views of the sources of the sounds of the heart which do not attribute much of the 1st sound to tension of the mitral valve. The sounds of the heart being confused, and there being absence of murmur, though valvular disease is present, is practically important as regards the diagnosis of cases first submitted to observation in very advanced stages, when the feebly acting heart is oppressed, and imperfectly transmitting the blood through the orifices.

Præcordial thrill was observed in only two cases : one‡ proved fatal ; and there was hypertrophy and dilatation of the left ventricle, with aneurism and mitral valvular disease. The other§

* Cases 28, 40.

† *Walshe on the Diseases of the Lungs and Heart*, pp. 223—226.

‡ Case 30. § Case 43.

was not fatal, and in this it was believed that mitral valvular disease was present.

XI.

Medical Treatment.

Dilatation of the cavities, hypertrophy of the muscular fibre of the heart, associated with structural change of the valves, is an incurable form of disease. All that we can attempt to do, is to regulate the bodily and mental states in such manner as shall maintain the actions of the heart as unembarassed as possible ; and to remove, by appropriate means, the secondary dropsical and bronchitic affections when these occur. The only practical point to which I shall advert is the signal benefit frequently observed under failing action of the heart in valvular disease, from the free and assiduous use of ammonia and other stimulants. I have witnessed several cases in which imminent peril was averted, and life prolonged, by these means. On the other hand, I have never seen a case of confirmed valvular disease in which digitalis or other sedatives were not distinctly contra-indicted, and I look upon that association which used to exist in the minds of practical men between the use of digitalis and heart disease as a very serious, and, I believe, generally admitted error in therapeutics.

Case 26.—*Dilatation of both ventricles—hypertrophy of the left; disease of the aortic valves, and the well-marked results of pericarditis and endocarditis, consecutive on rheumatism, related to syphilis.*

Ahmeenah, a Hindoo female, 39 years of age, had, about a year before she came under observation, been the subject of syphilis, followed by pain and swelling of almost all the joints, and latterly of dyspnœa, and fulness at the epigastrium. She was admitted into the hospital on the 14th December 1848, affected with general anasarcous swellings, dyspnœa, and cough. There was præcordial dulness from the 3rd to the 7th rib, and from the middle of the sternum to an inch external to the nipple. The impulse of the heart was increased, and a sawing

murmur took the place of both sounds, and was loudest between the 3rd and 4th ribs, about half an inch to the left of the sternum, continuing audible as the stethoscope was moved towards the clavicles, but lessening in the direction of the apex. There was occasional sibilus mixing with the respiration. The pulse was feeble. There was fulness and uneasiness at the epigastrium, and hepatic dulness extended to within an inch of the umbilicus. The urine was not albuminous. The dropsical symptoms and the dyspnœa increased ; and she died on the 25th December.

On examining the body after death, the pericardium was found to extend from the 2nd to the 7th rib, and its cavity contained about four ounces of serum. It was connected to the surface of the heart, chiefly over the left ventricle, by firm adhesions. The serous covering of the heart was for the most part thickened and opaque. The heart was much enlarged—there was dilatation of both ventricles, with hypertrophy of the left ; the tricuspid and mitral valves were healthy ; the lining membrane of the left ventricle, towards the aortic orifice, was for a considerable extent opaque, and much thickened. There existed at the upper part of the septum a thimble-like depression about an inch in diameter, lined by thickened endocardium, roughened by granules of lymph. The ring of the aortic valve felt cartilaginous and firm ; no dilatation of the aorta.

Remarks.—In this case, consequent on a rheumatic affection, there must have been pericarditis and endocarditis, of which the results were very apparent in the appearances presented by the heart after death. There were pericardial adhesions, with hypertrophy and dilatation of the left ventricle, with increased impulse, but not jogging in character. The second sound was replaced by a sawing murmur, indicating that aortic regurgitation took place, but there was not the jerking pulse of this condition. The aortic character of the murmur was distinctly indicated by its being loudest at the cartilages of the 3rd and 4th ribs, continuing most audible as the stethoscope was moved upwards, but decreasing as it was moved towards the apex.

CASE 27.—*Acute rheumatism ; pericarditis and endocarditis ; dilatation of the right side of the heart ; dilatation and hypertrophy of the left ventricle ; ossific state of the mitral valve ; hepatic congestion.*

Mahdoo Ruggoo, aged 24, a Hindoo Labourer, of originally robust frame, a native of Sattara, but resident in Bombay for a period of three years, following the occupation of a Boatman, addicted to the use of spirits for a year, was admitted into the clinical ward on the 10th August 1849. About twelve months before, consequent on exposure to wet and cold, he became affected with febrile symptoms, pain and swelling of the large joints, succeeded by uneasiness of the chest, dyspnœa and cough. The pectoral symptoms and the affection of the joints had continued more or less. On admission, the breathing was short and hurried ; the pulse irregular and feeble ; the skin of natural temperature ; the bowels reported to be regular. The only abnormal dulness of the chest was of the præcordial region—it reached from the 3rd to the 7th rib, vertically, and transversely from the left border of the sternum external to the nipple. The impulse of the heart was feeble ; the sounds were distinct, but distant, and there was no murmur. Dry bronchitic rales, with occasional crepitus, were heard here and there throughout both lungs. The abdomen was full, but not resistent. There was dulness on percussion two inches below the margin of the right ribs, and midway between the ensiform cartilage and the umbilicus, and uneasiness was complained of on pressure of the dull parts. With little alteration in these symptoms, he continued till the 2nd of September, when the impulse of the heart was observed to be somewhat increased, and a distinct rough murmur was audible just below the nipple, and external to it, and obscuring both the sounds of the heart ; but the sounds of the heart were both heard at the 3rd costal cartilage and upwards. The cough, the dyspnœa, pain of joints from time to time, the heart signs last noted, the bronchitic rales, and occasional crepitus ; the hepatic dulness and tenderness, with occasionally pale intestinal evacautions, continued with little change, and on the 20th September there was added—puffiness of the face,

œdema of the feet and ankles, and some degree of drowsiness. At this time cholera was prevalent in Bombay, and this patient became affected for several days with vomiting and watery purging, and considerable collapse, during which the dropsical symptoms much decreased. They recurred on cessation of the purging; the dyspnœa continued; he became delirious and drowsy, and died comatose on the 5th October. The cardiac murmur was last heard on the 1st October. The urine was frequently tested: at first it was free and of low density, latterly it was scanty; it never showed any trace of albumen. Leeches were on one or two occasions applied to the epigastrium, and blisters to the præcordial region. An attempt was made to induce the constitutional effect of murcury, but it was necessary to desist, in consequence of the irritable state of the bowels. The rest of the treatment consisted of diuretics, or stimulants or depressants, according to the indications.

Inspection nine hours after death.—Head.—The inner surface of the scalp was slightly tinged yellow. The brain and the membranes were not congested with blood, and were in every respect healthy. There was about one ounce and a half of serous fluid at the base of the brain.

Chest.—The lungs did not collapse very freely. In places there were a few bands of recent adhesions between the costal and pulmonary pleuræ, and there was very little serous effusion into the sacs of the pleura. The situation of the heart corresponded to the dull space noted on admission. The pericardium contained about five ounces of serum, but there was no perceptible alteration in the appearance of its serous surface. The heart was larger than natural—its serous covering to a considerable extent, particularly over the right ventricle, presented an opaque appearance, but nowhere were there traces of recent lymph effusion found. A considerable quantity of dark-coloured liquid blood flowed from the divided vessels of the right side. The right ventricle was considerably dilated; the tricuspid and pulmonary valves were healthy; the left ventricle was dilated, and its walls, perhaps, of little more than natural thickness; the mitral valves were converted into a thick ossific irregular mass; the aortic

valves were somewhat thickened, but not by earthy deposits. The ascending aorta and the arch were narrower, and their coats somewhat more attenuated than natural. The left auricle was considerably dilated, and yellow opaque patches, somewhat raised above the surface, were seen on its serous covering. The posterior part of the left lung was very much congested, and somewhat indurated, but not distinctly hepatized. There were several red indurated nodules, the largest the size of an egg, in different parts of the right lung, especially in the upper lobe.

Abdomen.—About a pint of dark-coloured serous fluid was found in the peritoneal cavity. The liver was almost of natural size ; when incised, it presented a mottled red and buff coloured appearance, and was somewhat indurated. The kidneys were healthy.

Remarks.—This case is of interest in many points of view. The heart disease was clearly related to an attack of acute rheumatism. On admission, a faulty diagnosis was formed from the presence, but faintness, of the sounds of the heart, and the absence of all murmur. The dulness of the præcordial region, and the feeble pulse, were attributed to pericardial effusion. Increased bulk of the heart and disease of the valves were not suspected. Again, when increased impulse of the heart, with a rough murmur at the nipple, obscuring both sounds of the heart, were noted, a fresh accession of pericarditis, with lymph effusion, was suspected—for I was not then aware of what this case and subsequent ones have since taught me, that a mitral murmur may obscure both sounds at the apex, but leave them distinct at the base. The case, then, on admission, was simply one of mitral disease, with dilatation and hypertrophy of the left ventricle, bronchitis, dilatation of the right ventricle, and much hepatic congestion. How it was that the murmur of mitral disease was not present before the 2nd September I am unable to explain.

The case is also of pathological interest in another point of view. The rheumatic diathesis had persisted from the period of the acute attack, there had been more or less pain of the joints experienced, and to this, probably, was due the degree to which the valvular disease, and consequent structural change

of the heart, had gone. We may believe, that if the rheumatic materies be speedily and completely eliminated, the tendency of lymph effusions about the valves and pericardium must be to become organized into very thin membranous deposits, to leave mere traces; but it will be otherwise if the materies be not eliminated,—the tendency to recurrence of the diseased processes and additions to the deposits will remain, and in this way great and permanent lesions be occasioned. The removal of the dropsical effusions under the serous evacuations of cholera, though it is what might be expected, is of interest. I recollect two other cases, one of ascites and pleuritic effusion, the other of ascites. In both cholera came on, and in both the dropsies were removed before death. The course of the cholera was longer than usual. This is also what might be looked for. The watery constituent of the blood transuding from the mucous membrane, is replaced by the absorption of the water of the dropsical effusion. This fact has a practical bearing on therapeutics. It justifies the belief that free serous evacuations from the bowels by hydragogues in dropsy are not so likely to be followed by exhaustion, for the fluid of the dropsy is ready to replace that evacuated from the intestinal canal.

Case 28.—*The results of endocarditis, implicating the mitral and aortic valves; dilatation and hypertrophy of the left ventricle; dilatation of the right ventricle.*

Mookeb, a Mussulman, 26 years of age, sometimes following the occupation of a Sailor, latterly serving as a Butler on board a merchant ship, addicted to the use of spirits, and habitually smoking tobacco and ganja. Had arrived by sea from Calcutta a month before he was received into the clinical ward, on the 25th August 1849. He was of stout habit of body; his face was puffed; his feet were œdematous; the respiration was short, hurried, and chiefly thoracic; the pulse frequent, irritable, and easily compressed. Sonorous and sibilous rales were general on both sides of the chest, and chiefly at the upper parts. There was no abnormal dulness, except of the præcordial region, and here it extended vertically, from the 4th costal cartilage to

the margin of the left false ribs, and transversely from the right side of the sternum to half an inch external to the nipple. The impulse of the heart was somewhat increased, and the sounds confused, but there was no distinct murmur audible. There was dulness on percussion for about three and a half inches below the margin of the right false ribs, and also to the same extent below the ensiform cartilage. He complained of dyspnœa, of cough, and of pain at the margin of the right false ribs, and in the epigastric region, and of giddiness on standing, or the least exertion. He stated that he had been ailing for the last ten days; that his illness commenced with dyspnœa, and a sense of heaviness in the abdomen, and about the same time the face and feet began to be œdematous; and that during the first four days he had experienced daily febrile accessions. The dyspnœa continued, the pulse lost strength, the skin became cold, the urine was scanty, and he died on the morning of the 27th August. The treatment consisted of a full dose of calomel, a blister to the præcordial region, stimulant diuretics, and on one occasion shortly before his death the hot air-bath was used; also sinapisms and friction to the extremities.

Inspection eight hours after death.—Chest.—The heart, much enlarged, was in relation with the parietes of the chest from the 3rd rib downwards, and from a line about an inch external to the nipple. The lungs were partially collapsed; the posterior parts were a good deal congested with blood, giving to places a firm nodulated feel, (pulmonary apoplexy ?*) The right side of the heart was distended with blood coagula and fibrinous coagula; there was no hypertrophy, and no disease of its valves. The left ventricle was dilated to fully double its natural capacity, and the walls were somewhat thicker than in the normal state. The mitral valve was opaque and thickened, and the tendinous cords were very markedly so, and of pale yellow colour. The endocardium between the mitral and aortic valves was also opaque. The semi-lunar valves were irregular and thickened, chiefly at their free borders, from a yellow organized warty-looking lymph deposit; and at the point of attachment to the inner

* I place this interrogatively, the fact not having been sufficiently looked into.

surface of the aorta of two of the semi-lunar valves there was on the inner wall of the artery a thickened firm deposit, each the size of a small pea. There was no increased effusion of serum in the pericardium.

Abdomen.—Above a line drawn from about the cartilage of the 8th and 9th false ribs across the cavity of the abdomen was occupied by the liver, which, when incised, bled freely, and was mottled brightly red. Both kidneys were somewhat lobulated and mottled on their surface, and showed traces of commencing yellow degeneration.

Remarks.—The seafaring life of this individual, the statement of the short duration of the disease, and the absence of distinct cardiac murmurs, led to the suspicion that the præcordial dulness was from pericardial effusion, and that the case was one of that form of acute general dropsy to which the term beri-beri* has been applied by some writers on tropical disease. The diagnosis was erroneous; the symptoms were those of the last stage of organic heart disease, overlooked in consequence of an imperfect history, and the absence of cardiac murmurs. The absence of these murmurs, when increasing valvular disease and failing irritability of the muscular fibre leads to much obstruction of the course of the blood through the heart, is a familiar fact—indeed, it may be always looked for before the fatal issue; but when cases are submitted to observation for the first time in these advanced stages, and nothing is accurately known of the history, then the absence of the cardiac murmur is not unlikely to lead to an error in diagnosis: at least this is not the only instance which has come under my own observation.

There was also commencing Bright's disease of the kidney.

* I have been unable to satisfy myself, either from reading or observation, of the expediency of introducing this term beri-beri into our nosology. Viewing as a distinct affection those occasional cases of incomplete paraplegia occurring in individuals of intemperate habits, termed barbiers by the older writers, it seems to me that beri-beri is nothing but a general dropsy, excited by cold and wet, either in individuals whose habit tends to become scorbutic, or in whom there is heart or kidney disease. If this view be correct, and I believe it to be so, this term beri-beri should be erased from our nosologies, as it seems to perpetuate error, and throw obscurity over what in fact is a very easily understood pathological condition.

CASE 29.—*Aneurism of the left ventricle of the heart, consequent on endocarditis and pericarditis.*

Mahomed Allee, aged 40, a Mussulman, a native of Bengal, but resident for fourteen years in Bombay, and following the occupation of a Sailor, and not intemperate in his habits, was admitted into the clinical ward on the 6th November 1849, and died on the 12th of the same month. He was a good deal reduced: the countenance was anxious; the respiration hurried; the pulse feeble and intermitting. He was easiest when on the right side, or in the sitting posture; decubitus on the back or the left side led to much aggravation of the dyspnœa and anxiety, and, in consequence of the suffering which they occasioned, minute and repeated examinations of the chest were impracticable. The præcordial dulness extended from the 4th costal cartilage to the 7th, and transversely from the middle of the sternum to just external to the nipple. The impulse of the heart was somewhat increased. There was a systolic murmur audible at the 4th costal cartilage, increasing in the direction of the apex, decreasing above the base. The second sound was natural. He complained of constant pain about the left scapula, but none of the præcordial region. The pain at the left scapular region had existed for about three months, but the dyspnœa came on only nine days before his admission into the hospital. About two inches below and external to the left nipple there was a depressed cicatrix, the mark, he said, of a gunshot wound received during the late war in Scinde.

Was never affected with rheumatism, or pain of the præcordial region.

Inspection.—Chest.—The lungs collapsed on opening the chest, and there was about a pint of serous effusion in the sacs of the pleura. The upper lobes of both lungs, more especially at their apices, contained many scattered miliary tubercles, with some induration of the intervening pulmonary tissue. The rest of the lung healthy and crepitating, but somewhat congested. The pericardium contained about two ounces of serum. The heart was much enlarged; it occupied vertically a space between the lower margin of the 2nd rib and the level of the 7th, and

transversely from the sternal junction of the 2nd right rib to the left nipple. There were firm close adhesions between the pericardium and the posterior and upper part of the left ventricle, also general thickening and opacity of the serous covering of the heart. The left ventricle was very much dilated. At its apex, and posteriorly below the mitral valve, it was dilated into two distinct pouches, the latter pouch large enough to hold a small orange, and its walls altogether membranous and opaque. It contained fibrinous coagula. The rest of the walls of the ventricle was of natural thickness. There was slight thickening of the mitral valve ; the orifice of the aorta was dilated. The right ventricle was also dilated ; the semi-lunar valves were healthy. There was no morbid appearance found in the interior of the chest corresponding with the cicatrix on its exterior.

Abdomen.—There was about a pint of serum in the cavity of the peritoneum. The free lower margin of the liver was about three inches below the ensiform cartilage, and about an inch below the margin of the right ribs, and the organ was somewhat congested. The kidneys were healthy.

Remarks.—From the appearance of the covering and lining of the heart, there could be no doubt of endocarditis and pericarditis having been present at some former time. The impaired irritability and atrophy of the muscular fibre, consequent upon these affections, readily explains the occurrence of the distinct aneurismal pouches in the left ventricle. There were no physical signs indicative of these aneurismal states, but the situation of the pain, and the increased discomfort from decubitus on the back and right side, had probably relation to the situation of the pericardial adhesions, and that of the aneurismal pouches in the posterior wall of the heart.

CASE 30.—*Rheumatism, followed by pericarditis and endocarditis ; disease of the mitral valve ; dilatation of the right side of the heart ; dilatation and hypertrophy, with circumscribed aneurism of the left ventricle. Death expedited by acute general peritonitis.*

Abdool Rahman, a Mussulman Horsekeeper, 50 years of age,

an inhabitant of Hydrabad, in the Deccan, and a resident in Bombay for about six years, was admitted into the Jamsetjee Jejeebhoy Hospital on the 13th December 1849. He had been addicted to the use of spirituous liquors for several years, smoked ganja and tobacco, and latterly also took opium. About three years before admission he had suffered for a month from pain o the large joints, unattended with swelling, he said, but that since then there had been no recurrence. For a year and a half he had experienced more or less dyspnœa, easily increased by exertion, but unattended with cough, till about eight days before admission, when cough began to be troublesome, and the dyspnœa to be more urgent, followed in two or three days by puffiness of the face and œdema of the feet and legs, and in this state he was admitted into hospital. The respirations were twenty-six, and chiefly abdominal. With exception of increased præcordial dulness, the chest sounded well on percussion, but sibilous and sub-crepitous rales were present more or less in all parts of the lungs. The præcordial dulness extended vertically from the 3rd costal cartilage to the margin of the left false ribs, and transversely from the middle of the sternum to about three inches external to the nipple. The impulse was forcible, extensive, and heaving, and the apex beat between the 6th and 7th ribs, an inch external to the nipple. There was a systolic bellows murmur very distinct below the nipple, and in the direction of the apex, but becoming faint above the base. The second sound was distinct, but wanting in sharpness. The skin was cool; the pulse 96 to 100, small, easily compressed, and slightly jerking. He complained of cough and dyspnœa, —both increased at night, the latter becoming very urgent on slight exertion.

The abdomen full and supple, without any sense of fluctuation, and there was dulness below the right false ribs for about two and a half inches, and extending upwards as high as the level of the 6th right rib. The bowels were slow, and the urine reported free. He continued under treatment till the 4th of March; the dropsical symptoms disappeared, and the dyspnœa and cough were much alleviated. The general character of the

pulse was small, irregular, and unequal, and varying in frequency. The rhythm of the heart's action was often observed to be irregular, two pulsations being succeeded by a period of considerable repose, and a distinct thrill was in general perceptible on placing the hand on the præcordial region. The dulness of the præcordial region, and the character of the murmur and of the second sound, continued unchanged. The urine was free, of varying density, and never albuminous. He was treated chiefly with combinations of camphor mixture, sesquicarbonate of ammonia, spiritus ætheris nitricus, tincture of hyosciamus, and preparations of squills. After his discharge from the hospital, he from time to time presented himself at the morning visit, and the physical signs of heart disease were found to continue without change. At length he was re-admitted into the clinical ward on the 21st August 1850. The abdomen was tense, tender, and fluctuating; the pulse frequent, and almost imperceptible; dyspnœa urgent. He died about twelve hours after admission.

Inspection nine hours after death.—Chest.—On opening the cavity of the chest, the lungs collapsed, and were found crepitating. There were old adhesions of the costal and pulmonary pleuræ of the right side. The pericardium was in relation with the anterior wall of the chest from the 1st to the 6th rib, and transversely beyond the right margin of the sternum to the right, and beyond the nipple to the left. There was no adhesion of the pericardium to the heart, but the surface of the heart, more particularly of the left ventricle, was covered with opaque patches. The right auricle was very much distended. There was also much dilatation of the right as well as of the left ventricle, and in both were found coagula of blood. The walls of the left ventricle were for the most part of natural thickness, with the exception of one place in the internal wall, midway between the apex and the mitral valve, where the coats were much thinned, the muscular tissue being almost removed, so as to form a pouch the size of a walnut. The endocardium surrounding the margin of the pouch for about half an inch was opaque and thick. The mitral valve was thickened, so as to permit regurgitation into the auricle. The aortic valve and the aorta were healthy.

Abdomen.—About two pints of turbid serous fluid were found in the cavity of the peritoneum, and an abundant effusion of coagulable lymph over the surface of the intestines formed tender bands of adhesion between them and the parietes, and between the convolutions. In several places the adhesions circumscribed collections of serum.

The liver was rather smaller than natural, and its substance felt hard under the knife. Its external surface was granular, but there was no very distinct appearance of cirrhosis of its incised surfaces. The external surface was covered with patches of coagulable lymph. Its anterior margin was firmly adherent to the ascending colon as well as to the diaphragm.

In the mucous membrane of the cœcum there was an ulcer of about the size of a rupee, and in that of the ascending colon there were three or four smaller ulcers, with patches of redness here and there. The other parts of the intestinal canal were healthy. Both kidneys were somewhat lobulated externally, and when incised the cortical portion presented a slightly granular appearance. The apices of some of the pyramids seemed somewhat indurated and fibrous. The spleen and stomach were healthy.

Remarks.—The relation of circumscribed aneurism of the heart to pre-existing endocarditis was well illustrated in this case. With the exception of the aneurism, the diagnosis was accurately made out during life from the physical signs, which indicated enlargement of the heart from dilatation and hypertrophy, and disease of the mitral valve, but not of the aortic.

CASE 31.—*Hypertrophy, with dilatation of the left ventricle; disease of the mitral and aortic valves, and of the commencement of the aorta; granular lymph patches on the surface of the heart.*

Bhickajee Arjoon, 40 years of age, a Hindoo Labourer, a native of the Southern Concan, not addicted to the use of spirituous liquors, was admitted into the Hindoo ward of the Jamsetjee Jejeebhoy Hospital on the 6th June 1851. He complained of pain and tenderness of the epigastric region, and there was

dulness on percussion, to within an inch of the umbilicus. The pulse was feeble. He was supposed to be affected with chronic hepatitis. A blister was applied to the epigastrium, and dysenteric symptoms, which were also present, were treated with ipecacuanha, opium, and extract of gentian. On the 7th July he for the first time complained of dyspnœa. On the 13th he pointed to the margin of the left ribs as the seat of pain. The pulse was small and easily compressed. There was præcordial dulness from the 3rd left costal cartilage to the 7th, and transversely from the sternum to an inch external to the nipple. Below, and internal to the nipple, there was a distinct and superficial rough murmur, obscuring both sounds. It was considered to be exocardial. On the 21st, the murmur was less, and the sounds of the heart are said to have been audible. On the 22nd the pulse was somewhat jerking in character. The symptoms were looked upon as those of pericarditis. The præcordial region was blistered, and he was treated with nitre, ipecacuanha, and blue pill, and he was transferred to the clinical ward on the 30th July.

It now appeared that about ten years before, he had suffered from rheumatism of the large joints, and had been slightly salivated; that about a month before his admission, he had been suddenly affected with dyspnœa, subsequent to which the epigastric pain and tenderness came on. On admission into the clinical ward, the breathing was short and hurried; the abdomen swollen and fluctuating; the feet and legs slightly œdematous; the pulse of good volume, and jerking. Distinct fulness of the præcordial region was observable—the dulness was as noted in the Hindoo ward. The impulse was best felt two inches below, and an inch external to the nipple. There was a rough murmur obscuring both sounds at the apex; at the base there was also a murmur, but different in tone, being more blowing in character, obscuring the first sound entirely, the second in part. He continued under treatment till the 28th August, when he died. There was increasing dyspnœa; the pulse maintained its jerking character; there was generally a relaxed state of the bowels. The urine was frequently tested, and showed no traces of albumen. He was treated chiefly with

combinations of ammonia, spiritus ætheris nitricus, and tincture of squills.

Inspection eight hours after death.—Chest.—There were about four ounces of clear serum in the sac of the pericardium, without any lymph flakes. The heart reached from the 2nd costal cartilage to the 7th rib, and extended to the right as far as the junction of the right costal cartilages; and where it rested on the diaphragm it had caused some degree of depression of the corresponding surface of the left lobe of the liver. The heart weighed 28 oz. The right auricle was much distended. Both the anterior and posterior external surfaces of the right auricle and ventricle presented here and there patches of organized lymph, thin and granular. The left ventricle was much dilated, and the walls thickened to three quarters of an inch. The right ventricle was very little dilated, and not hypertrophied. The mitral valve was thickened and opaque, without any osseous deposit, and not shortened.

The aortic valves were opaque, much thickened, but without ossific deposit: on pouring water upon them from the aorta, it was evident that they were inadequate, and permitted regurgitation. The aorta was somewhat dilated at its commencement, and its inner surface was granular and irregular, from deposit beneath the lining membrane, chiefly at the sinuses, behind the valves. The left lung was compressed by the enlarged heart, but, with exception of some degree of congestion of the posterior parts, the lungs were free of disease.

Abdomen.—The liver weighed 3 lbs. 3 oz. It projected an inch below the margin of the right false ribs, and was congested in the second degree. The mucous membrane of the large intestines presented variegated patches of redness, with full development of the follicles, and in some places distinct points of ulceration, with yellowish white centres and red edges. The right kidney was congested, the left rather pale, and showed some slight encroachment upon the tubular portion.

Remarks.—This case was not rightly understood on admission, from superficial examination. The congested liver from heart disease was considered to be enlarged from chronic inflammation.

That the hypertrophied and dilated left ventricle, and disease of the mitral and aortic valves, existed at the time of admission, there can be no doubt; but there may be a question whether the murmur first heard on the 13th July was exocardial, or dependent on the mitral valvular disease. It was at the time considered to be exocardial, and, probably, correctly so. The evidences of there having been pericarditic inflammation were distinct, and the mitral valve was not so structurally changed as to admit of much regurgitation, and cause so superficial and rough a murmur. While the patient was in the clinical ward, the murmur at the apex was believed to be mitral, that of different tone at the base to be aortic. The jerking pulse, and partly obscured second sound, were held to indicate the existence of aortic regurgitation. The appearances of the mucous membrane of the large intestines have their interest in reference to the morbid anatomy of dysentery—they were those of commencing follicular ulceration.

CASE 32.—*The subject of secondary syphilis; dilatation of the left ventricle, with marked traces of pericarditis and endocarditis; the mitral valve inadequate, from enlargement of the auriculo-ventricular opening.*

Ingayea, a Hindoo Labourer, 35 years of age, a native of Hydrabad, in the Deccan, and resident for some years in Bombay. About eighteen years before he came under observation, he was the subject of a syphilitic affection, and about twelve years afterwards of rheumatism, for which he was freely salivated. He had, however, occasionally suffered from pain of joints subsequently. He was admitted into the clinical ward on the 13th July 1851. He was somewhat reduced; the respiration hurried, and most difficult in the recumbent posture. There were sibilous and sonorous rales heard in different parts of the chest. There was dulness on percussion of the right side of chest, from the 5th rib downwards, below the margin of the ribs and the ensiform cartilage to an inch above the umbilicus, and there was a feeling of induration and tenderness in the dull parts below the ribs. There was no abnormal præcordial dulness noted, but

there was a systolic murmur, best heard at the apex. The impulse was felt of natural force between the 5th and 6th left ribs. The pulse was small and easily compressed; he was troubled with cough, and mucous expectoration. The abdomen was full, but not fluctuating; the thighs were œdematous. He complained of uneasiness at the epigastrium, increased after eating, which he stated had existed for about fifteen days. There was thickening and pain in the course of the right shin, and crustaceous patches from pustular eruption on the neck and head. He continued under treatment till the 30th December, when he died. On the 22nd July the upper limit of the præcordial dulness was the 3rd costal cartilage, and the outer limit was the left nipple; on the 23rd September the impulse of the apex was felt between the 6th and 7th left ribs. The systolic murmur, best heard at the apex, continued unchanged; the dyspnœa was constant and troublesome; the œdema and ascites increased, and there was dulness of the right side of the chest, with absence of vocal thrill, as high as a horizontal line an inch above the inferior angle of the scapula. The pulse continued small and compressible. There was no diarrhœa. The urine, ranging in specific gravity from 1·010 to 1·020, was frequently examined, but showed no traces of albumen: in quantity it was never less than 18 oz. in the twenty-four hours, and under the use of diuretics increased to from 60 to 90 oz., and then a temporary diminution of the dropsical symptoms took place. He was treated with diuretics and stimulants, also with elaterium, cautiously given, and which was also followed by temporary decrease of the dropsical symptoms, and alleviation of the dyspnœa.

Inspection.—Chest.—There were 50 oz. of clear serum of yellowish colour at the lower part of the sac of the right pleura, and firm adhesions connected the anterior surface of the upper lobe of the right lung to the costal pleura. The upper and middle lobes were spongy and crepitating, and the 3rd lobe was œdematous. There was no fluid in the left sac of the pleura. The left lung was also firmly adherent to the parietes of the chest, and was œdematous. The pericardium contained about

two ounces of clear serum. The heart was considerably enlarged; there were one or two opaque patches upon its anterior and external surface; the left ventricle was considerably dilated, but the walls were somewhat thinner than natural. The endocardium covering the columnæ carneæ on the left and posterior wall, and towards the apex of the left ventricle presented numerous yellow opaque patches, and in these situations the ventricular wall was thinner than elsewhere. There was no thickening of the mitral valve, but the auriculo-ventricular opening was of greater than natural diameter, and the valve was evidently inadequate. There was no dilatation of the aorta, nor any deposits on its inner surface. The aortic valves were healthy and adequate. The right ventricle and auricle were considerably dilated, and contained fibrinous coagula, as well as fluid blood. The tricuspid and pulmonary valves, as well as the right auriculo-ventricular opening, were normal. The foramen ovale was open to the extent of about half an inch, and the opening was valvular in character. Further examination of the body was not permitted by his friends.

Remarks.—The primary disease here would seem to have been endocarditis, related, probably, to the attack of rheumatism, leading to thickening of the endocardium in places, and atrophy in these situations of the muscular fibre, with probably fatty degeneration, though this was not positively ascertained. The endocarditis had also favoured the general dilatation of the cavity, by impairing the irritability of the muscular fibre. The mitral murmur was due to inadequacy of the valve—not from structural disease of itself, but undue size of the opening, consequent on dilatation of the cavity.

CASE 33.—*The former subject of rheumatism; dilatation of the left ventricle; disease of the mitral valve; much thickening of the endocardium; an aneurismal sac at the apex; also the marks of former pericarditis.*

Shamoo, a female, 40 years of age, a Hindoo Milk-seller, a native of Aurungabad, and resident a month in Bombay, was

admitted into the Jamsetjee Jejeebhoy Hospital on the 7th August 1852. The face was puffed; the feet and legs œdematous; the respiration short and hurried; the skin coldish; and the pulse small, and easily compressed. The præcordial dulness extended vertically from the second intercostal space to the margin of the left false ribs, and transversely from the right border of the sternum to external to the left nipple. The impulse was feeble; there was a faint systolic murmur, most distinct at the apex; at the base the sounds were confused, but the murmur was hardly audible. The abdomen was rather full, and was dull on percussion for about three inches below the right false ribs and the sternum, where there was uneasiness on pressure. She stated that three years before she had suffered from rheumatism, and that fifteen days before admission there was a severe febrile accession, preceded by chills, which continued for three days, and was followed by the œdema of the legs, and uneasiness of the abdomen. She continued with little change in the symptoms, and died on the morning of the 11th August.

Inspection three hours after death.—Chest.—Eight ounces of reddish serum were found in the pericardium. The heart was considerably enlarged. There were opaque patches on the anterior surface of the right ventricle, and at the apex of the heart there was a patch the size of a dollar, of thick organized areolar tissue, somewhat reddened, adherent firmly to the surface of the heart, but forming no adhesion with the inner surface of the pericardium. The left ventricle was much dilated, and the walls were in places somewhat thickened. The endocardium of the posterior surface of the left ventricle was converted into an opaque thick membranous layer, with here and there cacoplastic yellow deposits, about two lines in thickness. There were also opaque thickened patches of the endocardium of the anterior surface. At the apex there was a pouch in the thickened endocardium, large enough to hold a walnut, corresponding to the patch of adventitious tissue on the external surface; the muscular covering of the pouch was much thinned. The mitral valve was opaque and thickened, not ossified. The aorta and valves were

healthy. There was no dilatation of the right ventricle, and the valves were healthy. The lungs were healthy and crepitating. The body was not further examined.

CASE 34.—*Aortic valvular disease, probably traceable to a previous attack of rheumatism; apoplexy, followed by paralysis.*

Antonio Fernandez, aged 65, a Portuguese Cultivator, an inhabitant of a village in Salsette, was admitted into the Jamsetjee Jejeebhoy Hospital on the 8th February 1849. There was some degree of paralysis of the right side of the face, with thickness of speech. He walked feebly, but both lower extremities were equally affected. These paralytic symptoms had succeeded on apoplectic seizure, about two and a half months previously. He had suffered from rheumatism several years before, and at times subsequently had experienced uneasy sensations on the chest. On admission, there was slight dyspnœa and sonorous rales here and there. There was slight increase of præcordial dulness; no increased impulse; and a systolic murmur was distinct over the 4th costal cartilage, and continued more audible when the stethoscope was moved upwards than downwards. The second sound of the heart was natural. The urine was of rather low density, but showed no traces of albumen. He left the hospital on the 5th March, very little improved by the treatment.

CASE 35.—*Disease of the mitral valve, traceable to rheumatism.*

Maria Thereza, a Portuguese girl, 15 years of age, presented herself at the dispensary on the 6th January 1852. She had suffered from rheumatism, with swelling of the joints, five months before. For three months she had complained of uneasiness at the lower part of the sternum, and of some degree of shortness of breath; there was no increased præcordial dulness, but a distinct systolic mitral murmur was audible. She did not attend above twice, and there was no opportunity of following the case.

CASE 36.—*Disease of the mitral valve; commencing aneurism of the aorta suspected.*

Boorun Oodeen, a Mussulman Servant, 25 years of age,

presented himself several times at the dispensary of the Jamsetjee Jejeebhoy Hospital in the month of June 1852. He was somewhat reduced; the countenance was swollen, and slightly puffed; the breathing was hurried. On inspecting the chest, a slight fulness was observed at the upper part of the sternum. On placing the hand below the clavicles, a slight thrill was experienced, and the carotid arteries were visibly pulsating. The impulse of the heart was somewhat increased; the præcordial dulness extended from the 4th left costal cartilage, and its external limit was the nipple. At the apex of the heart there was a loud murmur, obscuring both sounds; at the 3rd left costal cartilage the murmur was faint, and both sounds of the heart were heard obscurely. At the second right costal cartilage a murmur obscuring both sounds was again heard; it was different in tone, being rougher than that heard at the apex. No pain, or purring tremor, or heaving impulse at the præcordial region. The pulse of the right wrist was small and feeble, that of the left of larger volume, both being frequent. Nothing abnormal in the respiratory signs. Decubitus was easiest on the right side, attended with much increase of dyspnœa on the back, and on the left side, with pain of the shoulder, extending down the arms and forearms. Abdomen supple. No œdema of lower extremities.

He stated that he had been suffering from dyspnœa and palpitation for about two months, and that they had come on gradually; that four months ago he had suffered from difficulty of deglutition, which, however, had disappeared; was affected with pain of joints, and slight swelling seven years ago; and had been the subject of syphilis and gonorrhœa. This statement rests on one careful examination of the patient. There was not an opportunity of repeating it, for he ceased to attend, and from inquiries made there is reason to think that he died shortly after his last visit to the hospital.

Remarks.—It is to be regretted that there was not an opportunity of repeating the examination in this case, and yet the diagnosis may be held to be tolerably distinct, viz. disease of the mitral valve, and commencing aneurism of the arch of aorta, without much hypertrophy or dilatation of the heart.

CASE 37.—*The former subject of malarious fever ; remittent fever ; disease of the mitral and aortic valves ; dilatation and hypertrophy of the left ventricle ; traces of old and recent pericarditis ; also the subject of cirrhosis of the liver.*

Govind Ragoo, a Mahratta Horsekeeper, native of a village near Bankote, resident in Bombay for eighteen years, 18 years of age, and in the habit of using spirituous liquors daily, was, about six months before he came under observation, the subject of intermittent fever for a period of six weeks. He then regained his health for a time, but became again affected with febrile symptoms about twelve days before his admission into the clinical ward, on the 29th November 1849. He stated that he had experienced daily attacks of fever, coming on with chills about 2 P. M., and terminating with sweating about 8 or 9 P. M., and that for eight days he had also suffered from cough. He had never at any time been affected with rheumatism.

On admission, he was a good deal reduced in strength ; there was increased heat of skin ; the pulse was frequent and jerking ; the tongue was moist and slightly furred. He complained of occasional cough, with scanty expectoration. There was no dulness detected anywhere in the chest, on percussion ; dry bronchitic rales were heard here and there in all parts of the chest. The impulse of the heart was increased ; there was a systolic murmur, continuing distinct to the top of the sternum, and also audible when the stethoscope was placed over the carotids. At the base of the heart the second sound was also obscured, but it became distinct upwards in the line of the sternum. The spleen was enlarged, and projected about two inches below the left false ribs. He remained under treatment till the 10th of December. The morning remission and afternoon exacerbation of the febrile symptoms were daily observed, and there was occasionally a second exacerbation in the course of the night. The cough, with mucous sputa ; the dry bronchitic rales, with latterly a little addition of crepitus in the dorsal regions, continued ; the increased impulse of the heart, and the systolic murmur persisted, but the obscurity of the second

sound was not again noted, and dulness on percussion of the chest was not detected anywhere. The pulse was frequent, and generally jerking, and varying somewhat in volume ; the urine showed no traces of albumen. On the morning of the 10th there was a good deal of collapse, with vomiting and watery purging,* succeeded by partial reaction, then again by collapse ; and he died at 7 P. M. of the 10th. The treatment consisted chiefly of combinations of quinine and antimony.

Inspection twelve hours after death.—The membranes and substance of the brain were healthy ; there were about three ounces of serum in the cavity of the cranium.

Chest.—Old adhesions existed between the anterior and upper part of the right lung and the costal pleura. The posterior part of both lungs was in a state of sanguineous engorgement ; their anterior portion, however, was soft and crepitating. The serous covering of the heart had a diffused red appearance, with white patches here and there, and the opposed inner surface of the pericardium had a dotted red appearance. The right ventricle of the heart was considerably dilated, and contained fibrinous coagula ; the left ventricle was much dilated, and its walls were thicker than natural ; the free edge of the mitral valve was three lines in thickness, but the deposit was not ossific. On the under surface of two of the aortic semi-lunar valves there were extensive warty-like deposits, the largest the size of a small pea. There was a similar deposit on the upper surface of the 3rd valve.

Abdomen.—The left lobe of the liver was very small, and in a state of cirrhosis. The surface was very irregular, and the substance of yellow colour, crossed in all directions by white bands. The right lobe was hard under the knife ; surface mottled dark red and yellow, and the substance of yellow colour, with dark red patches here and there. The left kidney was somewhat lobulated, and larger than the right, and showed about its middle some encroachment of the tubular on the cortical portion.

Remarks.—There was a great error in the diagnosis of this case. From the reduced state of the patient, the former attacks

* Cholera was at the time prevalent.

of intermittent fever, the enlargement of the spleen, the absence of præcordial dulness, and of previous rheumatism, the case was considered to be one of remittent fever; and the cardiac murmur, the jerking pulse, and increased action of the heart, were related to a supposed anœmic state; (the obscurity of the second sound of the heart on admission was unfortunately not sufficiently attended to;) whereas it is evident that the case was one of remittent fever, occurring in an individual affected with extensive valvular disease of the heart; the subject also of cirrhosis of the liver, and commencing disease of the kidney. From the history it might be inferred that here the endocarditis which led to the valvular disease had not been related to rheumatism, but the accounts given by the class of patients who resort to this hospital of their previous health are by no means trustworthy, and it is not expedient for the most part to attach very much importance to them, unless supported by confirmatory circumstances. The diffused redness of the surface of the heart, and the dotted redness of the inner surface of the pericardium, may probably be looked upon as illustrative of the liability of the capillaries of predisposed tissue to take on excessive action, under the continuance or frequent recurrence of general febrile disturbance.

Case 38.—*General dropsy, with dilatation of the right side of the heart; slight thickening of the mitral valve. Diagnosis as regarded the heart imperfect, in consequence of loud bronchitic rales.*

Hooseen bin Abdulla, a Mussulman, 45 years of age, an inhabitant of Bussora, and by occupation the Tindal of a Bugla, and liable to be exposed to the inclemencies of the weather, but not addicted to the use of spirituous liquors, to that of opium, or any other narcotic drug. About a year before he came under observation, during one of his voyages, he suffered from fever, which was followed by œdematous swellings of the legs, to which from that period he was liable up to his admission into the clinical ward, on the 3rd November 1848. He was then a good deal emaciated; the respiration was hurried, and there were general sonorous rales audible. The impulse of the heart was

increased, but the sounds were obscured by the rales from the lungs; the tongue was coated; the pulse was feeble; there was fulness of the abdomen, with hepatic dulness three inches below the ribs; the feet and legs were œdematous. During the time he was under treatment the bronchitic rales were present, and obscured the heart sounds. There was more or less of muco-puriform expectoration; the pulse was feeble. The urine was from 15 to 20 oz. in the twenty-four hours, and it was free of albumen. The dropsical symptoms increased; he became drowsy on the 15th December, and died on the 17th. He was treated with purgatives, and then with various combinations of diuretics, but without the effect of increasing the flow of urine.

Inspection twelve hours after death.—Chest.—The lungs did not freely collapse on opening the chest, and there were about two pints of serous fluid in each sac of the pleura.

Right lung.—There were firm adhesions here and there between the pulmonary and costal pleuræ, and between the base of the lung and the diaphragm, and the lung and the pericardium. The fissure between the upper and middle lobes was obliterated by adhesion. The substance of the lung was soft and crepitating throughout, but œdematous; the upper lobe was emphysematous. The lining mucous membrane of the bronchus and its larger ramifications appeared healthy.

The left lung adhered only to the diaphragm by firm bands; it also was soft, crepitating, and œdematous; and puriform fluid oozed from the bronchial tubes on pressing the incised surfaces. The mucous membrane of the bronchial tubes was red here and there, and covered with puriform fluid. The right ventricle and auricle of the heart were considerably dilated; the left ventricle was so also to a slight degree; the mitral valve was somewhat thickened; the tricuspid, the aortic, and pulmonary semi-lunar valves were healthy; the structure of the walls of the heart was also healthy.

Abdomen.—The cavity contained about eight pints of serous fluid. The liver was not enlarged; there existed some adhesions between its upper surface and the diaphragm, also between the lower surface and the transverse colon and duodenum; the

structure was hard under the knife. The stomach was contracted; the intestines pale and thin; the omentum contracted; the kidneys healthy.

Remarks.—We must suppose that in this case the general state of the blood and of the tissues was favourable to the occurrence of dropsical effusions, for the slight degree of heart disease was hardly sufficient of itself to occasion them.

Case 39.—*Dilatation of the right and left ventricles, with disease of the mitral valve.*

Pandoo Gunnoo, a Mahratta, 25 years of age, a native of Jejoory, in the Deccan, and lately arrived in Bombay before his admission into the Jamsetjee Jejeebhoy Hospital, on the 28th December 1849. He was in destitute circumstances, was anœmic in appearance, the prolabia being pale; the feet were œdematous, and he was subject to febrile accessions. He stated that he had never suffered from rheumatism. The following note was made on the 3rd January by Mr. Sub-Assistant Surgeon Atmaram Pandurung, at the time a Student attending the College:—

"The præcordial region is preternaturally dull, and the dulness extends from the 3rd left rib to the lower margin of the 5th, and from the right border of the sternum to a vertical line drawn from the left nipple. About the cartilage of the left 3rd rib, a blowing sound is heard in place of the first sound, and the second sound is prolonged, and is somewhat duller than usual. The blowing sound becomes more distinct, rough, and prolonged in character, as we proceed downwards in the direction of the apex of the heart, at which nothing is heard but a loud rasping murmur; upwards, in the direction of the aorta, it becomes more indistinct, so that at the top of the sternum it is almost inaudible, the prolonged dull second sound of the heart merely being heard." He died on the 4th.

Inspection ten hours after death.—Chest.—The sac of the pericardium contained between four and five ounces of clear serum; the membrane was healthy. The right ventricle was dilated. The tricuspid and semi-lunar valves of the pulmonary

artery were healthy. The left ventricle was also considerably dilated, and there was very little thickening of its walls ; there was general thickening of the mitral valve, chiefly at the free margin, with an ossific deposit the size of a pea close to the outer border. The aortic valves were healthy. The lungs were congested, chiefly posteriorly. The left kidney was pale, the right in a state of congestion, but neither of them structurally changed. The liver and spleen were healthy.

CASE 40.—*Dilatation of the right side of the heart ; dilatation, with hypertrophy of the left ventricle ; the aorta contracted ; traces of endocarditis, in the opaque state of the endocardium of the left ventricle, and of the mitral and aortic valves ; peritonitis.*

Nursoo, a Mahratta, 25 years of age, following the occupation of a Plasterer, was brought to the hospital on the 25th February 1851. He was said to have suffered from diarrhœa, but no accurate history of his illness could be obtained. The skin was cold, the pulse feeble ; there was orthopnœa, slight general anasarca, and the tongue was pale. There was increased præcordial dulness, and the sounds of the heart were confused. The respiratory murmur was loud, and mixed with crepitus in the right dorsal region, and there was some degree of dulness there on percussion. He died on the 25th.

Inspection four hours after death—the report drawn up by Mr. Carvalho.—Chest.—On removing the sternum, the pericardium was seen stretching across from right to left, its right margin corresponding with a line marking the junction of the right ribs to their cartilages, from the 1st to the 5th, and the left margin, with a similarly drawn line from the 1st to the 6th ribs ; about two ounces of yellowish serum were contained in it. The heart was considerably enlarged, some opaque patches of lymph effusion were seen on its external surface, chiefly over the right ventricle, but there were no adhesions between the surface of the heart and the pericardium. The cavities of both sides, but chiefly those of the right, contained dark coagulated blood. The right auricle and ventricle, especially the latter, were considerably

dilated. There was no thickening or other change of structure of either the tricuspid or pulmonary valves. The left ventricle was also considerably dilated, and hypertrophied; its endocardial lining had generally an opaque appearance. The mitral valve was somewhat opaque and slightly thickened, but quite pliant and effective. The aorta was in general contracted; its inner surface, near the commencement, and a little above the valves, presented on one side a thickened, irregular, and somewhat puckered appearance, from deposits on its inner surface. The semi-lunar valves were somewhat thickened at their free margins, but they were efficient, and did not admit of regurgitation. About two pints of serous fluid were contained in the cavities of the pleura. The lungs did not freely collapse, and both presented externally a mottled dark red appearance; they were imperfectly crepitating, and gave out where incised a good deal of frothy serum. The incised surface presented a gorged appearance, with, in places, darker coloured spots; no hepatization anywhere.

Abdomen.—About three pints of sanguinolent serum were contained in the cavity of the peritoneum, with flakes of lymph floating in it, and the fluid on removal coagulated into a gelatinous mass. The liver projected about an inch below the right ribs, and externally and internally was mottled red and yellow—congestion in the second degree. The kidneys were somewhat larger than natural, lobulated externally, and were of a reddish colour, but when incised presented no morbid appearance.

CASE 41.—*Dilatation and hypertrophy of the left ventricle; disease of the aortic valves; dilatation of the right ventricle and auricle.*

Hydur, an Arab Sailor, 35 years of age, was admitted into the Jamsetjee Jejeebhoy Hospital on the 8th March 1852. There was much dyspnœa; the præcordial dulness was increased, and both sounds of the heart were obscured by a murmur, best heard at the base. The pulse was frequent and jerking; the skin was cool; there was distinct fulness and induration, with abnormal dulness on percussion below the right false ribs, almost to the

umbilicus. He died on the 10th. There was no information obtained relative to his previous history.

Inspection.—There was about a pint and a half of serum in the sac of the right pleura. The left lung was œdematous, and both were connected by old adhesions to the costal pleura. There were five or six ounces of serum in the pericardium. The heart was considerably enlarged, and both sides were full of coagulated blood; the right cavities were dilated; the left ventricle was much dilated, and its walls were generally of about the normal thickness, but in one or two places rather thinner. The mitral valve was, perhaps, somewhat thickened, but it was adequate; the aortic valves were thickened, and the orifice patulous. There were irregular patches of deposit on the inner surface of the ascending aorta and the arch, but there was no dilatation.

Abdomen.—There was a pint of serous fluid in the cavity. The liver was displaced downwards; the surface opaque and somewhat granular: when incised, the surface presented a mottled red and white appearance.

Remarks.—The jerking pulse of aortic regurgitation was well marked; this, with the situation of the murmur, and it being diastolic as well as systolic, left no doubt in regard to the situation of the disease. The great projection of the liver below the right ribs during life, in part due to displacement, was no doubt chiefly so to enlargement from congestion.

CASE 42.—*Disease of the mitral valve; dilatation and hypertrophy of the left ventricle; not preceded by rheumatism, nor co-existing with renal disease.*

Doomah Enkuttee, a Hindoo, native of the Carnatic, 38 years of age, not addicted to the use of spirituous liquors, nor ever having suffered from rheumatism, observed, a month before his admission into the clinical ward, on the 28th July 1851, that his abdomen had become swollen, and his face and feet œdematous; his urine was scanty, and subsequently dyspnœa and cough were also present, increasing at nights, and on exertion. On admission, the abdomen was distinctly fluctuating, swollen, and tense, and there was much œdema of the feet and legs. There was

some degree of fulness of the præcordial region, and dulness extended vertically from the 3rd left costal cartilage to the 7th, and transversely from the sternum to the nipple. At the 3rd left costal cartilage there was a murmur, obscuring the first sound, and the second sound partially, and still more distinctly audible at the apex. The action of the heart was irregular and intermitting; the pulse small, irregular, and of unequal volume. Subcrepitous rale, mixed with vesicular respiration, on both sides of the chest. About an inch below the right false ribs there was a sense of induration and dulness on percussion.

The urine was at first scanty, but showed no traces of albumen. Under the use of ammonia, spiritus ætheris nitricus, and tincture of squills, the urine increased to 60 oz. in the twenty-four hours, was then of specific gravity 1·011, and gave no traces of albumen. The dropsical symptoms were gradually removed, and he was discharged from the hospital on the 14th September. During his residence in hospital, the præcordial dulness continued as on admission; the murmur, best heard at the apex, persisted; the first sound was sometimes not altogether obscured at the base of the heart; the pulse became regular and of better volume. At one time tenderness of the epigastrium was complained of, and leeches were applied for its removal; and for some days diarrhœa was also present.

Remarks.—There can be no doubt that the mitral was the valve diseased in this case, and it was an instance of the mitral murmur not always sufficing to obscure the first sound at the base of the heart.

Case 43.—*Disease of mitral valve, not traceable to rheumatism.*

John Domingo, a Portuguese Boy, 14 years of age, presented himself at the dispensary on the 30th September 1851, complaining of palpitation of the heart, which he stated had come on suddenly about nine months before. He had never suffered from rheumatism. There was no increased præcordial dulness, the impulse of the heart was increased, and a purring tremor was distinct to the hand. An inch below, and somewhat external to the left nipple, there was a loud systolic murmur, hardly

heard, at the 3rd costal cartilage, where, and at the ensiform cartilage, both sounds of the heart were distinct. The murmur was also audible between the inferior angle of the left scapula, and the vertebral column, and there also was heard a loud whiffing sound with the respiration. He took preparations of iron, and tincture of digitalis and hyosciamus, without advantage, and ceased to attend about the end of December.

He was seen again on the 29th of June 1852. He still complained of the palpitation, and occasional shortness of breath ; appearance spare, as before. There was no increase of præcordial dulness. The purring tremor was present, and the increased impulse. There was a loud booming murmur, just external to, and an inch below the left nipple, but it was not present at the 3rd costal cartilage, and the lower end of the sternum : in these situations the sounds of the heart were heard. The murmur was not perceived in the left interscapular region, but the bronchial respiration was much louder than on the right side, and extended as low as the inferior angle of the scapula. Was seen again on the 12th August and 9th September : the systolic murmur at the apex still distinct ; the sounds of the heart audible at the base ; the increased impulse and thrill were less ; no præcordial dulness. He complained less of palpitation.

Remarks.—The signs distinctly point to the mitral valve as the seat of disease. The whiffing sound in the left interscapular region gave the impression of compression of the bronchi, but this character had disappeared at the period of the last examination—then the respiration was quite bronchial in tone, but exaggerated.

CASE 44.—*Contraction of the orifice of the pulmonary artery, probably congenital; much hypertrophy, without dilatation of the right ventricle ; no disease of the left side of the heart.*

Mahadoo Babajee, a Hindoo Beggar, 15 years of age, of short stature, and disproportionately large head, a native of Alibag, in Angria's Colaba, and resident in Bombay from his childhood, was admitted into the clinical ward on the 22nd September 1850. He stated that from childhood he had suffered from dyspnœa,

occasional cough, and pain of the præcordial region; that he was liable to febrile attacks; that on one occasion his abdomen had become very tumid; that for four months before admission he had experienced pain, without swelling, of the large joints, and to these symptoms occasional headache had been added. On admission, the respiration was observed to be slightly hurried; the skin was cool; the pulse small and easily compressed; the abdomen somewhat full, but supple; the tongue coated with a white fur; the bowels regular, and the urine free. The chest sounded well on percussion, with exception of a slight increase of the præcordial dulness, which extended vertically from the 4th to the 6th rib, and transversely from the middle of the sternum to the nipple. The respiratory murmur was somewhat puerile in character, and without rales. The action of the heart was somewhat increased, and its apex beat in the intercostal space between the 5th and 6th ribs, and left border of the sternum. There was a systolic murmur, best heard at a little below and internal to the nipple, continuing distinct upwards and to the right side, and fading in the opposite direction. The second sound was normal. No thrilling sensation was experienced on placing the hand on the præcordial region. He remained under treatment till the 26th November, when he was discharged, little relieved. During his stay, the physical signs of heart disease continued to be noted as on admission. He complained of dyspnœa, of cough, occasional pain of the joints, of headache, and febrile disturbance from time to time. The pulse was always small, and easily compressed; the urine free, specific gravity from 1·012 to 1·020, and never giving traces of albumen.

This patient was re-admitted into the hospital on the 19th March 1851, affected with febrile symptoms. The systolic murmur was present, also dry bronchitic rales. He was attacked with symptoms of cholera on the 23rd, and died on the 24th.

Inspection twenty-four hours after death.—Head.—The calvarium, chiefly the occipital and frontal portions, was very thick, being more than quarter of an inch, but without any increase of the density of the diplœ. The furrows of the middle meningeal artery were deeply grooved. The membranes of the brain were

very much congested. The substance of the brain was firm, showed more bloody joints than usual, and the cortical portion was of darker tint than natural.

Chest.—The heart weighed 7½ ounces. With exception of the right auricle there was no dilatation of the cavities. The walls of the left ventricle were of natural thickness; those of the right ventricle were thicker than those of the left—they were rather more than half an inch thick. The orifice of the pulmonary artery was only of size enough to permit the passage of half the length of an ordinary dissecting case blow-pipe, and the surface towards the cavity of the artery, and immediately surrounding the opening, had a rough and papillated appearance, as of firm granular lymph deposit. The orifice seemed to be formed by adhesion of the free edges of the semi-lunar valves, with exception of their central part. The valves, however, were very little thickened, and a probe passed readily into the little pouch between them and the internal surface of the artery. The trunk of the pulmonary artery was of diminished capacity, and the walls were thinner than natural. The aorta and its valves were healthy. The lungs were not congested with blood; in parts they were dry and woolly, and the surface somewhat irregular, from slight emphysema.

Remarks.—Presuming on the rarity of disease of the valves of the right side of the heart, it was supposed that the aortic valves were the seat of disease in this case; but my belief is that a careful inquiry into the situation at which the murmur was best heard would during life have led to a correct diagnosis. The stunted growth, the absence of dilatation of the cavities of the heart, the freedom from dropsical symptoms or other signs of congestion, and the small pulse, all show that the blood was maintained in very reduced quantity; indeed, it was only by an adaptation of the quantity to the very contracted pulmonary orifice that the circulation of the blood could have been carried on. The complete absence of congestion of the lungs, so different from what obtains in most forms of heart disease, was interesting, but of very easy explanation.*

* The preparation is preserved in the Grant Medical College Museum.

CASE 45.—*Disease of the valves, probably the tricuspid, attended with congestion of the liver.*

Hookurah Verdajee, a Hindoo Sailor, 30 years of age, was admitted into the Jamsetjee Jejeebhoy Hospital on the 15th April 1852. He had suffered, nine months before, from purging, which had persisted for a period of six months, and been succeeded by fulness and uneasiness of abdomen, which were present on admission. The face was slightly puffed; the breathing somewhat hurried; the pulse feeble. There was præcordial dulness from the 4th left costal cartilage to the margin of the ribs, also from the right margin of the sternum to the left nipple. A systolic murmur was distinct below the nipple, becoming more audible as the stethoscope was moved towards the sternum, and was most distinct at the point of junction of the 6th and 7th left cartilages, to the sternum; it gradually faded in a direction upwards from the nipple. There was abnormal dulness, also, in both dorsal and lateral regions, attributed to hepatic and splenic enlargement. There was increased dulness below the margin of the right ribs, and midway between the ensiform cartilage and the umbilicus. The urine was scanty, but showed no traces of albumen. He complained of cough from time to time, and bronchitic rales, dry and moist, were occasionally heard. He continued under treatment till the 3rd of May, when he left the hospital.

Remarks.—From the position of greatest distinctness of the systolic murmur, the probability is that the disease was of the tricuspid rather than the mitral valve. The circumstance of the considerable hepatic enlargement (congestion) attended with but slight dyspnœa, also, would seem to support the view that the obstruction was in the right, and not the left side of the heart. It does not appear that the subject of this case had suffered from rheumatism.

CASE 46.—*Rupture of the heart from fatty degeneration.*

John Amarago, a Sailor, 55 years of age, was admitted into the Jamsetjee Jejeebhoy Hospital on the 6th March 1852, with bronchitic symptoms. The pulse was soft, and rather full, and there was some heat of skin. He died suddenly and unexpectedly

the day after admission, no information having been obtained in regard to his previous history. The pericardium was distended with bloody serum, mixed with clots. The left ventricle was ruptured longitudinally in two places, about an inch separate from each other, in the upper and outer part of the ventricle. The fissures were one an inch, the other half an inch in length ; one extended through the substance of the wall of the ventricle, and opened into the cavity obliquely ; the other was a rupture of the external fibres merely. The walls of the ventricle were somewhat thickened, but there was not any dilatation of the cavity. Over the right ventricle there was more than the usual amount of adipose tissue, and in two situations in the substance of the left ventricle were two distinct, defined, light yellow, granular looking patches, occupying half the thickness of the wall. The aortic valves were healthy. There were patches of deposit on the inner surface of the ascending aorta.

Remarks.—Though unfortunately a microscopic examination was neglected, there can be no doubt that the heart in this case was affected with fatty degeneration ; still the appearance of this degeneration did not exist at the seat of rupture.

CASE 47.—*Aneurism of the abdominal aorta. Death by rupture.*

Soorga Chunderbund, a Mahratta Washerman, 40 years of age, in the habit of smoking tobacco, and drinking moderately, was admitted into the clinical ward on the 21st March 1848. He was considerably reduced in flesh ; the countenance was anxious ; and he moved about with a stooping gait. In the epigastric region, chiefly, but not altogether, to the left of the median line, reaching to the umbilicus, and extending below the arch of the left false ribs, from the ensiform cartilage downwards, there was a round indistinctly circumscribed swelling, becoming more prominent on decubitus on the right side. The swelling was strongly pulsating anteriorly and laterally, but there was no bruit audible under the stethoscope. In the rest of the abdomen, along the margin of the right ribs and the ensiform cartilage, and in the left hypochondrium above the upper margin of the

tumour, the sound was tympanitic on percussion. The action and sounds of the heart were natural. He complained of pain of the loins, of impaired appetite, and uneasiness after food. The pulse was somewhat full, and the bowels slow. He stated that about a year previously, whilst engaged in ironing clothes, he felt a slight pain, first at the epigastrium, and that six months after he perceived a small pulsating swelling, which gradually attained the size which it presented on his admission.

He died suddenly the day after admission.

Inspection eight hours after death.—There was a large quantity of blood (several pints) between the layers and at the root of the mesentery, just below the superior mensenteric artery, and extending below the giving off of the renal arteries. There arose from the anterior surface of the aorta a tumour larger than a goose's egg, filled with coagula, and ruptured at its apex, which extended between the folds of the mesentery. The vena cava was pushed before the tumour, and was apparently compressed.

Case 48.—*Great dilatation of the ascending aorta, and the arch; an aneurismal tumour at the commencement of the descending aorta. There was no external swelling, but the other signs of the disease were very well marked.*

Sungoor Seedee, a Mussulman Sailor, an inhabitant of Bahrein, and of African extraction, 41 years of age, was admitted into the clinical ward on the 9th January 1849. He was somewhat reduced in strength, and the respiration was rather short and hurried, and easiest in the sitting posture. There was no marked dulness of the chest. On percussion he had occasional cough, with scanty muco-puriform expectoration. Sonorous rale was audible in the left scapular region, but elsewhere the vesicular respiration was good. There was no increased impulse of the heart at the præcordial region, and the two sounds were distinct, but from the 3rd rib upwards in the line of the sternum, inclining to the right towards the sternal junction of the right clavicle, there was a heaving impulse, very evident under the stethoscope, indistinctly so to the hand, attended with a single sound, but no murmur. When in the recumbent posture, there was an occa-

sional wheezing catch observable in the respiration. The pulse at the left wrist was 104 in the sitting posture, and of good strength; the pulse at the right wrist, and in the right carotid artery, was imperceptible. The abdomen was soft; the tongue was moist and clean; no difficulty in deglutition. When sitting he experienced uneasiness at the epigastrium; when recumbent the uneasiness extended over the chest and shoulders. He had first observed these symptoms two months before he came under observation, and they had gradually increased. He attributed his illness to his having often been obliged to lift heavy weights on board ship. During his stay in hospital, his nights were restless; he had occasional cough, and uneasiness about the sternum. On the 13th there was a slight murmur audible at the top of the sternum, but it was not again heard. Decubitus was easiest on the right side. He complained of difficulty of swallowing on the 25th, and there was some degree of febrile excitement. The breathing became disturbed, and the pulse feeble. He gradually sunk and died, without any marked change in the symptoms, on the 30th January.

Inspection twenty-five hours after death.—Chest.—Just above the semi-lunar valves the aorta became dilated to about four times its natural calibre. The dilatation involved the ascending aorta, the arch, and the commencement of the descending aorta; it included all the coats of the artery, with probably an exception at the commencement of the descending aorta, where there seemed to be a separate pouch, closely adherent to the bodies of the 4th, 5th, and 6th dorsal vertebræ, and filled by firm and fibrinous coagula. In the ascending portion of the aorta there was a loose coagulum, and at the commencement of the arteria innominata there was thickening, with irregularity of the surface of the lining membrane. The dilated arch of the aorta pressed upon the trachea just above its bifurcation. The dilated pouch at the commencement of the descending aorta made pressure on the æsophagus.

The lower lobe of the left lung adhered by recent adhesions to the costal pleura, and hepatized nodules were felt on pressing it. The heart was healthy.

Remarks.—In this case there was great dilatation of the ascending aorta, and of the arch, with a distinct aneurismal tumour at the commencement of the descending aorta. Though there was no external tumour, the nature of the disease was very well marked. The distinct pulsation and sound at the top of the sternum, independent of the heart, the symptoms of pressure on the trachea, the absence of pulse in the right wrist and carotid artery, in connection with the signs of a healthy condition of the heart, clearly indicated the nature and seat of the disease. The preparation of the diseased parts is in the museum of the Grant College.

Case 49.—*Aneurism of the arch of the aorta.*

Shaik Chand, 32 years of age, a Mussulman, native of Calcutta, but resident in Bombay for about six years, following the occupation of a Washerman, was admitted into the clinical ward on the 2nd December 1851. He was somewhat reduced. Just above the top of the sternum, and a little to its left side, there was a painful swelling the size of a hen's egg, strongly pulsating on all sides—the pulsation synchronous with the heart's systole. The swelling was more prominent in the sitting than in the recumbent posture—on placing the stethoscope gently over it a murmur was heard. The respiration calm ; no abnormal dulness of the præcordial region on any other part of the chest ; vesicular respiration general, but anteriorly obscured by a murmur. At the apex of the heart there was a systolic murmur—it also obscured part of the second. It increased in intensity in a direction upwards, and to the right, and at the 3rd right costal cartilage there was only a loud murmur heard, continuous with that heard at the top of the sternum. The impulse of the heart was rather increased, and was best felt between the 5th and 6th left ribs, on a line with the nipple. He had occasional dry cough, also difficulty of deglutition, and hoarseness of voice. The pulse frequent, of good volume, and jerking—no difference in that of the two sides noticed. There was no increased heat of skin. The tongue was coated ; the abdomen soft, and free from uneasiness. He stated that about twenty days before admission

he felt pain in the situation of the present swelling, as well as over the sternum ; that ten days subsequent to this the swelling made its appearance, small at first, but gradually increasing. He continued under treatment till the 23rd February ; the swelling slowly increasing in size, and becoming more tense. The pulsation was at times strong and distressing, but in general readily moderated by the action of digitalis, and then considerable relief was experienced. He became discontented with the little relief resulting from his stay in the hospital, and was urgent for his discharge. He was visited by one of the clinical clerks from time to time at his house. He died about a month after his discharge, suddenly, it is believed, but the particulars are not known.

ANNUAL REPORT

OF THE

EUROPEAN GENERAL HOSPITAL, FROM APRIL 1ST 1851 TO MARCH 31ST 1852.

BY M. STOVELL, ESQ.

Presented by the Medical Board.

1. AT the close of the last official year, viz. on March 31st 1851, there remained 57 patients in hospital. During the past twelvemonth 1,142 were admitted, making a total of 1,199 who have been under treatment. Of these 1,058 have been discharged, 54 remained in hospital on the 31st ultimo, and 87 died, being a per-centage of 7·256 on the whole number. The annexed return of the diseases which have been under treatment will show, at a glance, the leading particulars connected with the classes and number of such diseases, as well as the result of treatment.

2. At the period at which the last report closed, the season was tolerably healthy, and the amount of severe disease less than usual. The hot season, however, brought a considerable increase in the number of sick, and during April, May, and June, cholera prevailed to considerable extent. During the same months there was also a good deal of dysentery, diarrhœa, and hepatitis, more particularly during June. There were cases, also, during each of these months, of remittent and intermittent fever, but not in a severe form. During the months of July, August, and September, there was only one case of cholera, and much less fever than in the preceding year, but there were more cases than usual of dysentery, diarrhœa, and hepatitis. During October the hospital was singularly healthy—the number of severe cases being unusually small. November brought a great

increase of dysentery and diarrhœa, and cases of the former disease became still more numerous in December and January, rendering the cold season unusually unhealthy. In January the number of admissions was 117, a larger number than during any other month, and 24 of these were cases of dysentery. During the same period there was very little fever, and no very unusual amount of hepatitis. In February the cases of dysentery began to diminish both in number and severity, and at the close of last month there remained but few cases of that disease.

3. There were three most unusual features in the medical history of the hospital during the period under review,—features which had never before presented themselves since I first joined the hospital six years ago; viz.—1*st*, the maximum of admissions in any one month was in the cold season, instead of in August or September; 2*ndly*, the admissions with dysentery were more numerous than those with fever; and 3*rdly*, the cases of fever were so slight that not a single death took place from this cause.

4. I will now proceed to offer such brief remarks on the more important and prevalent diseases, their pathology, peculiarities, and treatment, as may seem necessary for giving a distinct outline of the medical history of the hospital during the past year.

5. *Fever.*—The number of admissions was 112, or 9·341 per cent. on the total number of all diseases. The admissions with fever have been gradually diminishing for some years past. In my report for 1847 I stated that the number was 186; in my last report the number mentioned was 135; this year it is only 112. Should further experience show a still further diminution, it might become useful and interesting to investigate the causes. It must be borne in mind, too, that this diminution in number has been proportional as well as actual, for in 1847 the total admissions with all diseases were 1,061; in 1850-51 they were 1,062, and in the year just closed 1,142. The cases, too, have become less severe, as well as less numerous. In 1847 the number of deaths from fever was 10; in my last report I showed the number to be 7; this year there has not been a single casualty. The total number of admissions with remittent fever

was 15, and the greatest number was in June, July, and October. The greatest number of admissions with intermittent fever was in May, June, and August. This state, too, is unusual, for in previous years, remittent fever had generally been most prevalent in August, and intermittent in September, October, and November. I have so often, in previous reports, stated my principles and method of treatment, that it seems quite unnecessary to dwell further on the subject. I have not seen any reason to treat the cases of the past year differently from those of the preceding one.

6. *Dysentery.*—No less than 124 cases have been under treatment, being 10·341 per cent. on the total of all diseases: 112 of these presented themselves in an acute form, and 12 in a chronic. The admissions were most numerous in June, November, December, and January. In the year 1850-51 the greatest number in any one month was in August; in the past year it was in January. There were 27 casualties, or 21·774 per cent. on the cases treated. Two of these occurred in men belonging to the Indian Navy, one in an officer of the Customs Flotilla, ten in merchant seamen, nine in paupers, two in pensioners, one in a clerk in a public office, and one in a woman. With two exceptions, all the cases which occurred in sailors were in an acute form. The two from the Indian Navy had been under treatment on board ship for ten and seven days, respectively. All the cases from merchant ships occurred in men who had been ill for different periods, varying from one day to six weeks, and in most instances without previous treatment. Twenty-two of the fatal cases were in an acute form; the remaining five in a chronic, occurring chiefly in pensioners and paupers, whose constitutions had previously been broken down.

7. The cases occurring in December and January were in a very severe form, and were attended by a higher degree of inflammatory action than has usually been met with in this hospital of late years. A *post-mortem* examination was made in 24 out of the 27 fatal cases. In every instance, with one solitary exception, there was ulceration, more or less extensive, in some portion of the mucous lining of the colon. In four

cases the ulcerative process had extended through all its coats into the cavity of the peritoneum, but in only one of these had the contents of the intestine escaped, lymph having been effused in the other three over the peritoneal portion of the perforation. In a majority of the cases, portions of the mucous lining of the colon were found soft, pulpy, and partially discoloured ; and in seven instances portions were in a sphacelated state. In seven cases there was fibrinous effusion on the peritoneal surfaces, agglutinating the convolutions of the intestines, or causing adhesion between the omentum and colon. In two of these cases the free edge of the liver was found agglutinated to the transverse colon. In thirteen cases there was considerable thickening of the substance of the large intestines from deposit of fibrin in the sub-mucous cellular tissue. In two cases there was serous effusion into the peritoneal cavity, and in one case slight effusion of pus. With regard to the liver, in eleven cases it was perfectly normal. In eight it was enlarged, but nearly normal in structure. In two cases it was enormously enlarged, and in one it was in a state of cirrhosis. In five cases there were abscesses : in one of these the liver was enormously enlarged, extending upwards as high as the third rib, downwards as low as the crest of the ileum, and laterally into the left hypochondrium. The extent to which hepatic complication is met with varies much in different years. In my last report I mentioned that in fifteen cases which were examined, the liver was found normal in no less than ten ; I have shown above that last year it was normal in eleven only out of twenty-four.

8. I mentioned in a previous paragraph that cases of fever had been diminishing both in number and severity. The reverse of this has unhappily been the case with dysentery. In 1847 only 76 cases were under treatment, and in 1850-51 there were only 78 ; but during the year now under review there were no less than 124. This increase is proportional as well as actual. But there is no increase in the proportion of deaths. In 1850-51 there were 18 casualties, or 23·077 per cent. on the cases treated. Last year there were 27 casualties out of 124 cases treated, or 21·774 per cent. It is difficult to account satisfactorily for this

increased prevalence of dysentery. During January it might possibly have been owing in some degree to the unusually cold weather which continued for two or three weeks, but the disease had previously been prevailing to an unusual extent in November and December, long before the exceeding cold weather set in.

9. It seems scarcely necessary to make any remark on the treatment, as I entered somewhat at length on this subject in my last report, and I have seen no reason to change my views.

10. *Hepatitis.*—46 cases have been under treatment, being 3·836 per cent. on the total of all diseases. The admissions were most numerous in May, December, January, and February. The greatest number in any one month was in February. There were 10 casualties, being 21·739 per cent. on the cases treated: seven of these were acute; the remaining three chronic. One of the fatal cases occurred in a carpenter employed on the railway, the cause of the disease being clearly traceable to long-continued daily exposure to the sun. One occurred in an old worn-out pensioner; one in a pauper who had been ill a twelvemonth; two in seamen belonging to merchant ships, who had been ill twelve days and six weeks, respectively, without treatment; two in seamen belonging to the Indian Navy, both of whom had been long under treatment on board their ships, and the remaining three in women of broken constitutions, the result of a long career of debauchery and intemperance.

11. A *post-mortem* examination was made in each fatal case. In four cases the liver contained abscesses: in three of them there was, in each case, a solitary abscess in the right lobe; in the fourth there were three abscesses, two being small, but the third containing about two pints of healthy pus. In one of the cases of single abscess the liver was enormously enlarged, and the right lobe was almost entirely occupied by an abscess, containing four pints of pus. The upper surface of the liver was intimately adherent to the diaphragm, and encroached greatly on the thoracic cavity, reaching as high as the fourth right rib. The abscess was pointing in the direction of the lung, and the sole separating medium was the diaphragm, for the substance

of the liver, which had formed the upper wall of the abscess, had been absorbed. In one case there was pulmonary complication. In seven cases the liver was considerably enlarged, and in three of these it was disorganized. In one case it weighed nine pounds: it was met with in one of the three women, previously mentioned as having been leading dissipated lives for a long time. In two of the chronic cases there was also serous effusion in the peritoneal sac, and slight ulceration in the mucous lining of a portion of the colon.

12. I have so often, in previous reports, dwelt on the treatment, that it seems quite unnecessary to say anything more on the subject.

13. *Cholera.*—In my last report I mentioned that cholera had been more than usually prevalent throughout the year, and it continued to prevail during April, May, and June. Since then only six cases have been admitted, viz. one in August, a second in November, a third in January, and the other three last month. The total number admitted was 22, and the casualties 16, or 72·727 per cent. on the cases treated. This is a higher rate of mortality than has occurred in this hospital for many years. In my last report the per-centage was 64·516. Of the twenty-two admissions, thirteen occurred in seamen, two in paupers, one in a draftsman in the Chief Engineer's office, one in a man belonging to the Garrison band, one in a private of the 1st Fusiliers, one in a boy, two in girls, and one in a woman. The duration of disease previous to admission varied from six to twenty-four hours. Seven were admitted about six hours from the commencement of the attack; nine between six and twelve hours; and six between twelve and twenty-four hours. Nine were admitted in a state of collapse, and many of them in a very advanced stage. Each of these cases proved fatal. Out of the remaining thirteen, admitted previous to collapse, seven died. Two cases, admitted in a moribund state, proved fatal within an hour after admission.

14. *Post-mortem* examinations were made in thirteen out of the sixteen fatal cases. The most marked and undeviating feature was, as usual, the peculiar appearance of the blood, which

was almost invariably found black and thick, and in the arteries as well as veins. In a large proportion of cases the left cavities of the heart were filled with it, as well as the right. The viscera were all gorged with it, particularly the lungs and liver. In every case the vessels of the brain were congested, and there was uniformly effusion of serum in the ventricles or at the base. In nine cases the mucous lining of the stomach was dotted with patches of vascularity. The peritoneal reflections were uniformly normal. In one case, in which the heart weighed 11½ oz., but was perfectly normal in structure, there was a strip of semi-organized fibrin, about two inches in length, lying across the floor of the right auricle, extending into the ventricle, and attached rather firmly to the tendinous cords of the tricuspid valve. In one case, the inner coat of the duodenum, near the pyloric extremity, presented a patch of ulceration about the size of a rupee, which had perforated the coats of the intestine. The size of the perforated aperture was just large enough to admit a quill of ordinary size. Around the patch of ulceration there was considerable thickening in the coats of the intestine, so as greatly to diminish its calibre. It was evidently a result of the ulcerative process of some standing. It occurred in a case which was treated and examined by Assistant Surgeon Mead.

15. With regard to treatment, I have nothing of the least interest to communicate. The majority of the cases were treated in the manner mentioned in former reports. In several cases chloroform was given, with much relief to the suffering caused by muscular contraction. In seven cases, Assistant Surgeon Mead tried the effects of general bleeding, but, with one exception, each case proved fatal.

16. *Delirium Tremens.*—29 cases have been under treatment, or 2·410 per cent. on the total of all diseases. The casualties were 2, or 6·896 per cent. on the cases treated. One of these occurred in an engineer in the Steam Factory, and the other in a cooper in the Indian Navy. In one case the liver was greatly enlarged, extending into the left hypochondrium. In the other case the meninges of the brain were congested, and there was serous effusion at the base. The further examination in this case

was rendered interesting from the following circumstances. The patient was the engineer just alluded to. In 1847 he was admitted under my care with hepatitis, terminating in the formation of an abscess, which discharged its contents through the bronchi. He got perfectly well, and never afterwards suffered either from hepatic or pulmonary irritation. On examining the chest and abdomen, the lower lobe of the right lung, to the extent of about three inches in circumference, was found hepatized and closely adherent to the diaphragm, and there was a corresponding and co-extensive adhesion between the diaphragm and upper surface of the liver. The liver itself was slightly enlarged, yellowish in colour, fatty, and friable, easily giving way under the slightest pressure.

17. *Ebrietas.*—94 cases have been under treatment, or 7·839 per cent. on the total of all diseases. The casualties were 4, being 4·255 per cent. on the cases treated. One case occurred in a pauper, two in engineers in the Government Steam Department, and the fourth in an engineer in the P. and O. Company's Dockyard. In each case there was congestion in the meninges of the brain, and more or less serous effusion in the ventricles and at the base. In one case the liver was nearly normal; in a second it was greatly enlarged, and yellowish in colour; and in the two other cases it was approaching the state of cirrhosis. In two cases there were patches of vascularity in the mucous lining of the stomach.

18. Having now mentioned the leading facts and pathological features of the more important and prevalent diseases admitted during the year, I will take but a very brief notice of the remainder.

Scorbutus.—44 cases were admitted, and two died. The fatal result in one case was owing to pulmonary complication. Both lungs were found studded with tubercles in various stages of softening. In the other case the patient was apparently doing well, but was suddenly seized with severe abdominal pain, and died in a few hours. On examination fœcal matter was found in the cavity of the peritoneum, a perforation having taken place in the descending colon.

Phthisis.—12 cases were admitted, and 6 died. The lungs in each case were found extensively diseased.

Bronchitis.—28 cases were admitted, and 3 died. One occurred in a child, and an examination was not permitted by the friends. The other two occurred in seamen, and in one of these, on examination, an aneurism of the right common carotid was found, close to its origin from the arteria innominata. The lining membrane of all the bronchial ramifications was highly injected.

Diarrhœa.—88 cases were admitted, and 4 proved fatal. One occurred in a pauper of a broken down constitution, a second in a seaman, a third in a man belonging to the garrison band, and the fourth in a woman who had long led a life of intemperance and debauchery.

Paralysis.—8 cases were admitted, and 3 died. One occurred in a pauper of a broken constitution, a second in an engineer in the steam department, and the third in a seaman who had been ill a month on board ship.

Scrofula.—One case proved fatal in a man belonging to the Indian Navy. He had long been ill. His lungs were found studded with tubercles.

Syphilis.—Out of 56 cases admitted, two proved fatal. One occurred in a pauper who had been long suffering from secondary symptoms, and he sunk from diarrhœa. The second case occurred in a seaman, and was complicated with pulmonary disease.

Dropsy.—Out of two cases admitted, one proved fatal. He was admitted in an advanced stage from the Indian Navy.

Vulnus Incisum.—One fatal case occurred from this cause. A seaman deliberately locked himself up in a room, and then effectually cut his throat. The incision was between the thyroid cartilage and os hyoides, opening into the pharynx. He died from asphyxia eight hours after admission.

Aneurism.—One death occurred from aneurism of the abdominal aorta, which on examination was found to extend from the centre of the 1st lumbar vertebra to the inferior margin of the third, its transverse diameter being about four inches. About

three pints of blood were found in the peritoneal cavity; the opening in the aneurismal sac, through which the blood had escaped, being nearly circular, and scarcely a line in diameter. It was situated in that portion of the sac which was overlapped by the left lobe of the liver.

Fractures.—Out of 13 cases admitted, 1 proved fatal. It occurred in a police constable. He fell out of a window 34 feet above the ground, and extensively fractured his pelvis and sacrum.

Ulcers.—Out of 20 cases admitted, 1 proved fatal. A woman of broken constitution, the result of a long career of debauchery and intemperance, was admitted with a large foul ulcer on the right leg. This, however, improved for a time, but her health was completely broken, and she gradually sunk. Her liver was found in a state of cirrhosis.

Laryngitis.—A case of this disease, in an acute form, was admitted eight-and-forty hours from the commencement of the attack, and proved fatal. He was largely depleted, and eventually it became necessary to open the trachea.

19. I have now given a brief account of all the fatal cases. The total number during the year was 87, viz. 27 from dysentery, 10 from hepatitis, 16 from cholera, 2 from delirium tremens, 4 from ebrietas, 2 from scorbutus, 6 from phthisis, 3 from bronchitis, 4 from diarrhœa, 3 from paralysis, 1 from scrofula, 2 from syphilis, 1 from dropsy, 1 from cut-throat, 1 from aneurism, 1 from asthma, 1 from fracture, 1 from ulcer, and one from laryngitis.

20. The important subject of morbid anatomy has been constantly kept in view, and a *post-mortem* examination has been made in every fatal case in which no objection was raised by relations or friends. An examination has thus been made in 80 out of the 87 fatal cases.

Bombay, 1st April 1852.

Annual Return of Sick in the European General Hospital, from April 1st 1851 to March 31st 1852.

Class of Disease.	Diseases.	Remained.	Admitted.	Total.	Discharged.	Died.	Remaining.
Fevers	Febris Ephemera	0	30	30	30	0	0
	„ Intermittens Tertiana	0	23	23	23	0	0
	„ „ Quotidiana	1	44	45	44	0	1
	„ Remittens	0	15	15	15	0	0
Eruptive Fevers.	Variola	0	2	2	1	0	1
	Varicella	0	1	1	1	0	0
	Rubeola	0	2	2	2	0	0
Diseases of the Lungs.	Bronchitis Acuta	0	20	21	17	2	2
	„ Chronica	0	8	9	7	1	1
	Pleuritis	0	2	2	2	0	0
	Hœmoptysis	0	1	1	1	0	0
	Catarrhus Acutus	0	4	4	4	0	0
	„ Chronicus	0	1	1	1	0	0
	Phthisis Pulmonalis	3	12	15	9	6	0
	Asthma	1	7	8	7	1	0
Diseases of the Liver.	Hepatitis Acuta	4	39	43	31	8	4
	„ Chronica	2	7	9	5	2	2
	Icterus	0	1	1	1	0	0
Diseases of the Stomach and Bowels.	Dysenteria Acuta	2	112	114	86	23	5
	„ Chronica	2	12	14	9	4	1
	Dyspepsia	0	5	5	4	0	1
	Colica	0	5	5	5	0	0
	Diarrhœa	3	88	91	83	4	4
	Obstipatio	1	26	27	27	0	0
Epidemic	Cholera	2	22	24	8	16	0
Diseases of the Brain.	Cephalalgia	0	14	14	14	0	0
	Apoplexia	1	0	1	1	0	0
	Paralysis	0	8	8	3	3	2
	Mania	0	4	4	4	0	0
	Delirium Tremens	2	29	31	29	2	0
	Epilepsia	0	2	2	2	0	0
Dropsies	Anasarca	0	1	1	0	1	0
	Ascites	0	1	1	1	0	0
Rheumatic Affections.	Rheumatismus Acutus	1	43	44	43	0	1
	„ Chronicus	4	36	40	39	0	1

Class of Disease.	Diseases.	Remained.	Admitted.	Total.	Discharged.	Died.	Remaining.
Venereal Affections, and Diseases of the Genital Organs.	Syphilis Primitiva	3	41	44	41	0	3
	„ Consecutiva	3	15	18	13	2	3
	Ulcus Penis non-Syphilitica	0	1	1	1	0	0
	Bubo Simplex	1	23	24	24	0	0
	Gonorrhœa	1	22	23	20	0	3
	Orchitis	2	22	24	22	0	2
	Strictura Urethræ	0	11	11	9	0	2
Abscesses and Ulcers.	Phlegmon et Abscessus	3	38	41	38	0	3
	Ulcus	0	22	22	18	1	3
	Fistula in Ano	0	2	2	1	0	1
	„ Perineo	0	1	1	1	0	0
Wounds and Injuries.	Luxatio	0	1	1	0	0	1
	Subluxatio	0	14	14	14	0	0
	Vulnus Incisum	0	8	8	7	1	0
	Contusio	1	45	46	45	0	1
	Ambustio	1	2	3	3	0	0
	Fractura	1	13	14	11	1	2
	Concussio Cerebri	0	1	1	1	0	0
Diseases of the Eye.	Ophthalmia	0	16	16	16	0	0
	Nyctalopia	0	1	1	1	0	0
Diseases of the Skin.	Urticaria	0	2	2	2	0	0
	Ecthyma	0	4	4	4	0	0
	Porrigo	0	2	2	2	0	0
	Scabies	0	2	2	2	0	0
	Psoriasis	0	2	2	2	0	0
	Lepra	0	1	1	1	0	0
Other Diseases.	Aneurisma	0	1	1	0	1	0
	Cynanche Parotidea	0	1	1	1	0	0
	„ Tonsillaris	0	3	3	3	0	0
	Cystitis	0	2	2	2	0	0
	Dracunculus	0	13	13	12	0	1
	Dysuria	0	2	2	2	0	0
	Epistaxis	0	1	1	1	0	0
	Hæmorrhois	0	9	9	9	0	0
	Hernia	0	3	3	3	0	0
	Hydrocele	0	3	3	3	0	0
	Necrosis	1	1	2	2	0	0
	Neuralgia	0	8	8	8	0	0
	Otitis	0	5	5	5	0	0
	Scorbutus	7	44	51	48	2	1
	Scrofula	0	1	1	0	1	0
	Splenitis	0	3	3	3	0	0

Class of Disease.	Diseases.	Remained.	Admitted.	Total.	Discharged.	Died.	Remaining.
Other Diseases.	Tumores	0	3	3	3	0	0
	Varix	0	4	4	4	0	0
	Vermes	0	2	2	2	0	0
	Ebrietas	2	80	82	76	4	2
	Laryngitis	0	1	1	0	1	0
	Leucorrhæa	0	1	1	1	0	0
	Menorrhagia	0	2	2	2	0	0
	Parturitio	0	10	10	10	0	0

Supplementary Table.

	Number admitted during the year.	Discharged.	Died.	Remaining.	Average Age of Patients.	Average number of days under treatment.
Cholera	22	6	16	0	24·727	3·727
Diarrhœa	88	80	4	4	29·011	6·704
Hepatitis	46	30	10	6	30·934	21·065
Dysentry	124	91	27	6	30·733	15·661
Fever	112	111	0	1	26·312	7·723

APPENDIX.

APPENDIX.

No. 1.

Additional Notes on Articles of the Materia Medica exported from Aden. By J. VAUGHAN, Esq., &c. &c.

Presented October 1852.

COPAL is brought from the coast opposite to the island of Zanzibar. It is found in irregular flakes at a considerable depth from the surface of the ground. Seedees are employed to collect it, and solely for the benefit of the Imaum of Muscat, who, being also ruler of Zanzibar, claims the produce as his private property. In the same latitude, on the Western Coast of Africa, in the region of Congo, similar beds of this substance are found and worked.

Copal is usually considered a vegetable produce of one of the Dipterocarpeæ. It is sometimes mixed with amber, and sold instead of it, in the Indian markets. As the home of the African mineral copal agrees very much with that of the fossiliferous amber, it would seem that a nearer affinity exists between the two substances than has been hitherto supposed. Perhaps, however, it may be found that this copal is an inferior kind of amber.

HEETOO is the name of a bark largely used by the Abyssinians in making their "Hydromeli," or "Mead." It is called "Talooddoo" at Massowah. The tree is common throughout the country, and attains the height of from twelve to sixteen feet. Its trunk is unusually thick in proportion to the other parts. The flower resembles that of a lotus, and the seeds are not unlike those of the cotton plant. The leaves and fruit are believed to possess poisonous properties. When small quantities of either are eaten it is said that vertigo, violent vomiting, &c. are produced. The Abyssinians, moreover, firmly believe that perpetual barrenness results from partaking even sparingly of the leaves, fruit, or bark; and that, should pregnancy exist at the time, abortion will most certainly follow. In large quantities death is the result. The bark consists of a thick epidermis, nearly black, very rough, corrugated and flaky, with a smooth inner lining of a reddish yellow colour, fibrous, and spongy, with a bitter astringent taste. In preparing their "Mead," the Abyssinians first pound a quantity of the bark, and steep it in water

for some time ; then add a certain quantity of honey, and the process of fermentation is allowed to go on for four or five days. The beverage thus produced, when taken in moderation, is refreshing and exhilirating, but intoxicates if indulged in to excess. The root, pounded and applied externally, is extensively used in hæmorrhoids by the native practitioners, and considered an excellent remedy.

KORARIMA CARDAMOM is the name given by Pereira to the large Abyssinian cardamom which is exported chiefly from Massowah. The capsules are about three quarters of an inch in length, and somewhat narrow in proportion. The flower of the seeds differs from the small Malabar cardamom, and is less pungent than the seeds imported to Europe from the Guinea Coast. According to Dr. Beke, the Korarima Cardamom is brought to the market of Baso, in Southern Abyssinia, from Tamtee, a country situated in about 9° N. lat., and 35° E. long. The name it generally goes by is the common Arabic term for cardamom. The Arabs use it as a carminative, and as a spice to their coffee. The larger capsules, when perforated at their base, are employed to construct the "Meshbehas" or "Rosaries" of the Arabs and Abyssinians.

The annual export of this drug from Massowah has been estimated at £200. It is taken chiefly to India, and the opposite coast of Arabia, and small quantities find their way to the Aden market.

No. 2.

A Report on the most prevalent Diseases that have occurred in the 29th Regiment N. I., stationed at Surat, during the Official Year ending 31st March 1852. By G. NUTTALL, Esq., Assistant Surgeon.

Presented by the Medical Board.

DURING the last twelve months, the most prevalent diseases have been fevers, rheumatic affections, affections of the stomach and bowels, and those included under the head "Phlegmon et Abscessus."

The fevers were of both genera, the continued and intermittent : of the former the only variety met with was the ephemeral ; whilst with regard to the latter genus, all its three varieties—the quotidian, tertian, and quartan—presented themselves, though in very different proportions.

The ephemeral variety, which in general appeared to have been caused by overfatigue, was characterized by its usual symptoms of slight rigors, with loss of appetite, nausea, thirst, headache, accelerated pulse, furred tongue, and increased

heat of surface, terminating in perspiration; and required little else in the way of treatment than rest, and one or two mild mercurial and saline aperients—or, in other words, regulating the biliary and alvine secretions. A single emetic was, in many of the cases, where the tongue was more than usually foul, sufficient to effect a cure.

The vast majority (nearly nineteen-twentieths) of the cases of intermittent fever admitted were of the quotidian variety; but few cases of tertian, and hardly any of quartan, were met with, and among those that presented themselves there were no examples of the double or treble form of either. In by far the greater number of the quotidian variety, the only well-marked stage was the hot—both the cold and sweating stages, particularly the former, being in general very feebly developed. The paroxysms, as a general rule, in all the three types, occurred in the after part of the day, and, except in the cases of quartan, rarely exceeded six hours. They were also often incomplete, often irregular, but in no case inverted. Very few of the cases presented any local complications: in one, however, that terminated fatally, the brain was implicated, and in several others (which nevertheless subsequently recovered) the lungs were secondarily affected. With regard to the treatment of the paroxysms when the symptoms of the cold stage happened to be at all severe, (only observed, however, in very few cases,) all that was found necessary to moderate them was warmth to the surface of the body, diffusible stimuli being hardly ever required. On the supervention of the hot stage, more especially when vascular action ran high, cooling diaphoretics, most frequently antimonials, were had recourse to, with a view to as speedily as possible induce the sweating stage, which latter, when induced, was in no instance long of subsiding into an intermission. After the paroxysm an emetic was usually administered, if the tongue was very foul. If, however, only slightly furred, a few grains of calomel, in combination with an antimonial, (from a quarter to half a grain of tartar emetic commonly,) followed up in a few hours by a purgative—either the compound jalap powder, the common black draught of the hospitals, or a rhubarb draught. Both of these simple measures,—the administration of an emetic or of a mercurial, followed by a purgative,—were in many of the cases at once productive of a cure, even where the paroxysms had recurred more than once before coming under treatment. In those cases, however, where a cure was not at once effected, and which were almost invariably marked by a persistence of the foul state of the tongue, the fever was usually got rid of by attending to the state of the biliary and alvine functions, and of that of the skin. So remarkably amenable have the vast majority of the cases been to these simple methods of treatment, that during the last four months, in not more almost than half a dozen of them has quinine been employed. One case in particular, of quartan fever, which had resisted the administration of this remedy for at least a fortnight, speedily yielded to the adoption of the system previously detailed. In those cases in which, though the fever had been got rid of, debility and loss of appetite remained, the milder tonics, as cinchona or chreat, were exhibited for a short time, to complete the cure.

Most of the cases of rheumatism were of the chronic articular form. In two or three, however, there was considerable pain, increased at night; tenderness, swelling, and tension in one or more of the larger joints; the pulse being quick, full, and

hard; and there being present besides, thirst, loss of appetite, constipation, and high coloured urine. In no case, however, that came under treatment, was the heart implicated, though in one at one time that complication appeared to be threatened. With regard to the treatment of those cases that approached the acute, except in that case in which an extension of the disease from the joints to the heart was threatened, depletion was never required, and then only locally. More advantage was derived from the combination and frequent use of calomel, tartar emetic, and opium, than from the employment of colchicum or nitrate of potash in large doses; or even of lemon juice. In the chronic cases, where the disease was confined to one or two joints, local application, such as blisters, to the affected parts, were had recourse to; whilst of internal remedies made use of, none were found so serviceable as the hydriodate of potash. In all those cases, when any considerable amount of pain at night was complained of, opium, most commonly in the form of Dover's powder, was employed for its relief.

The diarrhœa that showed itself at various times during the last twelve months appears to have presented no deviation from its usual symptoms; the discharges, though often frequent and copious, being accompanied by very trifling nausea, griping, or flatulence, and in no cases by pain increased on pressure. In cases for the most part so simple, little else was required in the way of treatment than the administration, two or three times a day, of from 15 grains to a scruple of the pulv. cretæ comp. cum opio., the patient being at the same time restricted as far as possible to a farinaceous diet, or of small doses of hydrarg. cum cretâ, with from 3 to 5 grains of Dover's powder. In those instances in which it was thought advisable, as the disease advanced towards a close, to administer a laxative, the one commonly employed was a rhubarb draught, combined with aromatic confection.

The cases of dysentery that came under treatment were chiefly remarkable for the absence of febrile or inflammatory symptoms, and for their almost invariable preference for local manifestation, there being little or no heat of skin, no unnatural frequency of pulse, no headache, no thirst, no nausea. There was commonly, however, slight pain (though no tenderness to signify) in the abdomen, with slight tormina and tenesmus. In most of the cases the evacuations were natural, and the abnormal discharges consisted of mucus, or of mucus mixed with blood. In no case was there any putrid sanies, or films of false membrane, or pus. With regard to the treatment, in consequence of the absence of any great amount of inflammatory symptoms, blood-letting was seldom necessary, and, when necessary, local depletion commonly sufficed. Counter-irritation to the surface of the abdomen was more commonly employed. With regard to internal remedies, in those cases where the terms appeared in fault, mercury was more or less made use of, either in the shape of Twining's pill, or in that of calomel, or hydrarg. cum cretâ, combined with Dover's powder, the diet being all the while as carefully regulated as possible, and the bowels being from time to time gently opened by small doses of castor oil, guarded by a few drops of laudanum. In those cases that proved obstinate, more particularly if any considerable amount of blood continued to be mixed with the mucus, much advantage was derived from the use of the acetate of lead with opium. Mild tonics were commonly resorted to, to establish the cure.

Nearly all the cases under the head "Phlegmon et Abscessus" were acute; few or none of them were idiopathic; and very few of them indeed were accompanied by any amount of constitutional irritation. Wherever the exciting cause was manifest, it was at once, if practicable, removed; if necessary, local depletion was had recourse to, followed by poultices: as soon as suppuration was supposed to be established, from the supervention of softening or fluctuation in the part, a free opening was at once made, to give vent to the matter. Poultices were only continued so long as suppuration continued profuse: as soon, therefore, as the discharge began to moderate, these were abandoned for a compress and bandage, which commonly succeeded in effecting a cure. If, however, the suppuration continued profuse, tonics and (in one case) change of air were resorted to, in addition to stimulating local applications.

So few cases of any of the other classes of disease came under treatment, that there are not sufficient data on which to found a report. There was not a single case of cholera during the whole official year.

The most interesting fact that came under my observation, since joining the corps in the beginning of December 1851, was a recovery from a gunshot wound, in which the ball had taken the following course:—Having passed through the anterior superficial layer of muscles of left forearm, (entering about the middle of outer side of limb, and emerging close to inner side of bend of elbow,) and grooved the inner surface of lower third of left upper arm, it continued its course into the abdomen, entering that cavity, as nearly as could be estimated, between the bodies of the 8th and 9th ribs—at all events, at a spot about half way between the nipple and umbilicus, though considerably to the left of a line drawn perpendicularly through the former, and making its exit near same spot on the opposite side. It finally passed through the right forearm, about the junction of the lower and middle thirds; and to conclude, produced in its passage a compound fracture of both radius and ulna in succession. The left arm and left side of the trunk were also severely scorched. The patient was the wife of a sepoy in the regiment, and was at the time of receipt of the injury supposed to be in the third month of her first pregnancy—a supposition subsequently confirmed by appearances. The only way that it seems possible to account for the stomach having escaped perforation was owing to its empty condition, nothing having been eaten for nearly twelve hours previous to the infliction of the wound by her husband. After symptoms, however, warranted the conclusion that its outer coats had been injured. The liver appeared to have escaped in a miraculous manner. Her recovery occupied about seven weeks, and if art had anything to do with it, it must have been by keeping the system for the first three or four weeks constantly under the influence of opium, and by employing stimulants from time to time as the vital power began to flag. Strange to say, abortion was never even threatened.

No. 3.

Cases of Snake-bites.

Presented by the Medical Board.

Case 1.—Private A. N., aged 23½ years, 1st Bombay European Regiment (Fusiliers), stationed at Poona, admitted 10th October 1851. Period of residencein India 1 year. Constitution robust. Admitted about 1 A. M. About five hours previously, while on the road from Kirkee, was bitten in the right forefinger by a snake, which he was at the time holding in his hand. After this he went home to his barrack room, not experiencing any feeling of pain or uneasiness from the accident; went to his bed, where he appears to have gone to sleep, and nothing was observed till five hours afterwards, when he was noticed to be awake, and apparently suffering pain. He was then brought to the hospital. On admission, a small sore, resembling the scratch of a nail, was observed on the inner side of right forefinger, near the tip. Scarcely any blood appears to have escaped from it, and there was no enlargement of the part. Patient was in a very drowsy state, and answered questions in an indistinct manner. Complained of slight pain up the arm, and in the injured finger, but no swelling had yet taken place. Extremities warm, and pupils quite dilatable; Pulse 100, small; bowels stated to be open; breathing rather quick.

Applicet cataplasm. digit. Habeat statim. Spirit. hordei. ℥iss. Tinct. opii m, xv, ft. haust. Repeat dos. post hor. i.

3 A. M.—Since the above report, has complained of some difficulty in deglutition, and breathing has also become more laboured. Has a feeling of oppression over chest. The pain of arm has somewhat increased, and the patient is evidently becoming more collapsed. Pulse small. Bowels have not been moved since last report.

Repeat haust. et applic. sinapis. pect.

At 6 A. M. patient appeared somewhat better than before, the difficulty of respiration having diminished, as also the pain. A feeling of numbness is now present in arm; pulse small and quick; skin cool. Became suddenly worse about half an hour afterwards, having had a shivering fit, which lasted a few minutes, immediately after which he was in a state of collapse, and expired in about half an hour.

Post-mortem examination six hours after death.—The heart was evidently in a healthy condition but the auricle and upper part of the ventricles were filled with masses of coagulated blood. The cavity of the thorax was found to contain a considerable quantity of bloody serum. Several pleuritic adhesions existed in the lungs. The lungs were much engorged with blood, and presented an appearance very similar to the first stage of inflammation; they were of the usual size. No other abnormal appearances existed in the body, but the man's death may be attributed to congestion about the lungs and heart.

Case 2.—A Chobdar on the establishment of the Right Honorable the Governor, at Mahableshwar, aged about 40.

On the morning of Wednesday the 2nd April reports, that yesterday afternoon, about eighteen hours previously, he was bitten on the right foot by a snake. The snake he did not see. The foot was found slightly swollen, and also very slightly painful on pressure. No other symptoms. No mark or wound visible. The foot was freely scarified, and ammonia applied; a purgative draught given, and carbonate of ammonia grs. viii. in water every hour.

In the evening, in the same state: bowels freely acted upon; local symptoms as before. The man had several indolent ulcers over the right tibia, over which bandages of strapping were applied.

April 3rd.—In the same state: no pain, except on pressure. Says he slept well, but feels drowsy.

Repeat the purgative medicine, and continue the carb. ammonia, with spt. æther. nitric. as before. He continued in the same state during Thursday, and expressed himself as relieved from the drowsiness. Bowels and kidneys freely acted upon. Between four and five in the afternoon, blood was observed to cover the bandages over the sores on the right leg. On taking them off, the sores were found covered with thin venous blood, which oozed out very slowly from the surface of the sores. No blood from any other part. The scarifications made over the foot had healed up. The swelling in the foot as before, but now no pain. To continue the ammonia draughts, adding to each dose camphor grs. viii.

Vesp. 10½.—In the same state: oozing continues, and the blood incapable of coagulation, which is thin, and of a venous colour. Is very restless; pupils natural; pulse 68, and natural; is perfectly sensible; no stupor; has slept during the day, and taken his usual food; skin moist and warm; no blood in the urine, which patient has passed freely. To continue the camphor and ammonia draughts, adding brandy as occasion may require. A draught of tinct. opii ℥ i. *c*, brandy ℥ss to be given if restless.

April 4th, 5 A. M.—Passed a tolerably quiet night: bowels opened, with no blood visible; pulse quiet, 65, and strong; pupils natural; the mouth bloody; blood from the gums, but not observed to ooze out; complains of heaviness in the head; the eyes dim; no pain in the abdomen. The blood in increased quantity from the ulcers on the tibia, and also from the old bruise on the sole of left foot.

℞ Ol. ricini ℥iss. Spt. æther. nitrici ℥iss. Mist. camph. ℥ij lb. statim.

Continue the ammonia and camphor, omitting the brandy; strong animal soup to be given. For some hours during the night the apothecary reports the oozing ceased.

10 A. M.—The bowels freely opened, with blood mixed with stools; the urine of a deep colour, *stained*, not *mixed* with blood. Appears more at ease, and the eyes more lively. To continue the medicines, with sulph. of quinine, grs. iii, omitting the carbonate of ammonia. Pulse changed; very weak, and varying, 75. Brandy ℥ss to be given occasionally.

Continued in the same state during the day. In the evening blood was observed to ooze out in increased quantities from the mouth, and also from the sores;

the urine and a stool much mixed with blood. From the appearance of the clothes, blood was oozing from the rectum. The patient gradually became insensible and torpid, with weak pulse, and hurried breathing, the blood issuing in increasing quantities. Stimulants—camphor, ammonia, brandy and opium—were administered.

April 5th.—The patient died on Saturday morning, between 7 and 8 o'clock.

Case 3.—C. L., Private, 6th Regt. N. I., stationed at Bombay. Admitted 20th October 1851, aged 30 years.

Strong constitution. Was brought into hospital about 8 P. M. last night, having been bitten on the great toe of the right foot by a snake, whilst on duty at Malabar Point. Nearly two hours had elapsed before he applied for relief, and the symptoms were not of a very marked character. There was no particular pain in the part bitten; slight swelling round the wound; the temperature of the body did not appear changed, nor was there any unnatural quickness or slowness of the pulse.

Habeat statim. ℞ Tinct. ammon. camph. ℥ss in mixture camph. ℥ss, and to be repeated at intervals.

Caustic was applied freely to the wound.

11. P.M.—He complains of pain and contraction in the muscles of the throat; cannot swallow anything; inclines very much to vomit; pulse and skin as before.

Hot brandy and water has been ordered, but he cannot swallow it.

About ½ past 11 he became insensible, and he died at 12 P.M., four hours after admission.

No. 4.

Extracts from the Annual Reports of the Civil Surgeons at Dhoolia, Kaira, Dharwar, Kolapore, Tanna, and Bombay.

Presented by the Medical Board.

Dhoolia.

Fever.—Of fevers of every kind there have been 128 cases treated in the jail, of whom 2 died. A large proportion were of the intermittent form, of which the quotidian type was by far the most frequently met with. Generally speaking, the disease yielded readily to ordinary treatment, though occasionally the paroxysms came on at such irregular intervals as to render it difficult to ward them off. The months during which they were most prevalent were September, August, and

March. The reason for a large number in the last named month I am at a loss to discover. The treatment has been much the same as that usually adopted. In the intermittent forms, as soon as the type was accurately ascertained, and the precise time noted when a paroxysm might be expected to recur, a full dose of quinine (5 to 10 grs.) was given about an hour beforehand, little or no quinine being otherwise administered. As a general rule, bleeding was not resorted to; but occasionally, when the disease appeared to be dependent upon congestion of some internal organ, or when acute inflammatory disease was present, blood was withdrawn, either generally or locally, as seemed most advisable. When the digestive organs were much deranged, the iodide of potassium and infusion of chereyta have been found very useful in restoring a healthy tone to them.

Eruptive Fevers.—Though there is always more or less variola in the town and neighbourhood of Dhoolia, there has only been one case in the jail. This may in a great measure be accounted for by the fact that almost every prisoner has previously had small-pox. Those who have not had the disease, nor been subject to cow-pox, are vaccinated as soon as possible after admission. Vaccination is practised in the town and neighbourhood of Dhoolia by myself and assistants. It is not, however, without much trouble that even a few persons are induced to allow their children to be vaccinated. The chief reasons urged are, that they cannot see the benefit of vaccination, and that as their forefathers did without it, they prefer to do the same. The total number vaccinated is 363, being 109 less than the previous year. The decrease may be attributed to a diminution in the number of cases of variola. When small-pox is prevalent the people are frightened, and, though they have not much confidence in the prophylactic, they fly to it as a last resource.

Hydrophobia.—Three cases have come under notice during the past year. All three died, and in only one was medicine administered sufficiently early. An outline of the cases as taken down at the time the patients were under observation may, perhaps, be interesting.

The first case was an old blind man, admitted on the 10th June 1851 into the blind asylum. On the 14th he complained of being cold in the morning, but soon became hot; his tongue was foul, and bowels confined. Castor oil ℥ss relieved the latter readily, but the skin remained hot, and the pulse quick. During the night he felt very thirsty, but evinced a dread of water, and would not taste it. On the 15th the thirst continued, but he could not be prevailed upon to take any water. He swallowed some, however, under the idea that it was medicine, but with very great difficulty. It appears that he was bitten in the leg by a dog four months before, and as he had taken some native prophylactic, he imagined that he was perfectly secure against hydrophobia. The wound did not heal for about a month. At the time of admission there was no discharge from it, nor did it appear at all open. I determined to try the effect of mercurial ptyalism, and had 5 grs. of calomel put upon his tongue every hour, and mercurial ointment well rubbed in. At 11 A. M. his pulse was full, but irregular; skin cool, tongue furred, but moist; respiration occasionally hurried; not much thirst; had taken a little congee. Mercurial frictions, &c. to be continued. At 4½ P. M. he was much the same: had swallowed and retained a little congee. Water to moisten his mouth had frequently been used, but invariably brought on a spasm. About half an ounce of mercurial

ointment had been rubbed in during the day. Pulse good ; skin cool ; bowels not moved, but had passed urine once since the morning. 8 P. M.—Had taken a little conjee under the name of medicine, and also washed his mouth out with water occasionally. No appearance of froth, or extra secretion of saliva ; very restless ; respiration hurried and difficult ; no pain anywhere ; pulse rather strong ; no ptyalism ; no great amount of thirst ; skin cool. He took at this time calomel 10 grs. opium 4 grs. No sleep was, however, produced by the opium, so at 12 o'clock it was repeated. This, even, appeared to have no effect ; spasms increased in frequency and severity. He made frequent but ineffectual attempts to swallow water of his own accord. He appeared to retain his senses till 4 A. M., when frothy fluid issued from his mouth, horrible convulsions came on, and at 5 A. M. of the 16th he died.

The second case was a Buniah, aged 18, who was bitten in three or four places by a rabid wolf, on the 11th June 1851. It was not till several hours after the receipt of the injury that he applied for advice. Some pills recommended by Dr. Gibson as a prophylactic were administered. He took one, night and morning, for three days. He would only drink a small quantity of the decoction recommended to be taken with the pills, as it produced vomiting to a great degree. On the 24th June he was prevailed upon to take two more of the pills, but he would not touch the decoction. On the 25th July, about 10 A.M., when eating his food, it was observed that he could not swallow water. Shortly afterwards his respiration became hurried, and there was a sensation of constriction of the chest, attended with some degree of pain. His friends tried to relieve this sensation by the application of hot bricks, &c. Towards evening the difficulty of respiration increased, and the aversion to even the sound of the word " pānee" was excessive. During the night his imagination became disordered : he fancied that he saw a wolf constantly before him, and his spasms and struggles were so violent as to alarm his friends. He continued in this state, and died at 6 A.M. on the 26th, about 10 minutes before I reached him. The friends refused to allow a *post-mortem* examination to be made.

The third case was a Shikaree, bitten by the same animal, and almost at the same moment. He would not take Dr. Gibson's medicine, but preferred trusting to some native remedy. The wound, which was in the foot, healed in the course of a few days, and the man felt very well, with the exception of his digestive organs being somewhat deranged, until the 25th July, when he showed an aversion to water. He took food as usual, and slept tolerably well for two nights. On the evening of the 27th he became decidedly worse : spasms came on, and he had great difficulty of respiration. When called to him at about 6 A.M. of the 28th, I found him labouring under the following symptoms :—he was trembling violently, as if he had just endured a severe spasm ; his pulse was full, irregular, and beat 78 in the minute ; body of a slightly increased temperature, and surface dry ; the eyes were fixed, as if staring intently upon some hideous object ; the throat did not appear swollen, though the spasms in it at the bare mention of the word " pānee" were very severe. I attempted to treat this case upon the plan adopted by Dr. McGregor, of the Bengal Army, for the treatment of delirium tremens, and ordered 3 grs. of extract of opium every hour, till sleep was produced.

As the tincture of opium had been brought instead of the extract, one drachm was given at once, but it induced a violent spasm, and scarcely any was swallowed. He was placed upon a cart, with a view of being conveyed to the hospital, and 3 grs. of extract of opium were given, but convulsions of a very severe nature came on in rapid succession, and he died before arriving at the hospital.

Of the others bitten by the same wolf, one, an old woman, died on the 31st July, from natural decay, without any symptoms of hydrophobia. She took both the pills and decoction of Dr. Gibson. Another, a child, very much bitten about the face and neck, was not allowed to try the medicine, but is now quite well. The remaining one, a Carcoon, took the pills, but not the decoction. A few days ago he was reported to be in excellent health. As four persons had been bitten by the same animal, I trusted a good opportunity would have been afforded of testing the efficacy of the medicines recommended by Dr. Gibson, but, with one exception, none took the medicine properly.

Scorbutus.—There have only been two cases treated during the past year. One, an aged female, had been in the jail for nearly 34 years, and had scarcely left her bed for the last fourteen months. In the previous year 56 cases of this disease were admitted, and many others were treated, but entered on the sick report for other diseases : five out of the number died. This, as I stated in the last annual report, was nearly as many as in all the other jails of the Bombay Presidency added together. For many years before scurvy had at certain seasons always prevailed to a greater or less degree in the Dhoolia Jail. The opinion I then ventured to express as to its prevalence was, that when much rain fell the situation of the jail did not afford the prisoners a wholesome atmosphere to live in, and that the supply of vegetables was too small. During the past year the quantity of rain was only 18·99 inches, and not more than 2·61 inches fell at any one time. This, doubtless, was favourable, and tended to decrease the probabilities of the men's constitutions becoming debilitated. But I am inclined to think the daily supply of vegetables being doubled, and each prisoner being allowed a quantity of lime-juice or of tamarinds daily in addition to the ordinary diet, was of more avail. This plan was commenced on the 1st June, as a prophylactic measure ; and although the lime-juice and tamarinds have for some time been discontinued, the extra supply of vegetables is still kept up. A garden, which is cultivated by the prisoners, has been established, and from it the jail is daily supplied with fresh vegetables. Another year's experience will, I trust, confirm the benefits already resulted.

KAIRA.

Cholera.—Epidemic cholera appeared among the prisoners in the jail in May 1851, the number of admissions from that disease being 34 ; whilst in the preceding year only 15 were admitted. The mean average of the thermometer for the month of May was 99·7°, and for the same month during the last eight years 101·43°. The average fall of rain for each year from 1842 to 1850 was 31·96 inches. Little connection can be traced, however, between the appearance of cholera, and either a very elevated temperature, or a deficiency in the fall of rain, although the former may, perhaps, be considered one of the predisposing causes.

Fever.—The admissions are more frequent in the months immediately following the monsoon. The complications are at that time more important, and these lead

to a higher mortality in the cold than at any other season. In the fatal cases "the symptoms were—great prostration of strength, and a change in the type of fever, which assumed a continuous form; the symptoms of cerebral congestion, however, were not well marked; there was no pain in the head, simply a feeling of languor and debility; the pulse was accelerated and weak." * * * * * *

"Enlargements of the liver and spleen, &c. have been of rare occurrence, considering the large number of admissions from fever." * * * * * *

"Hepatitis is a very uncommon affection at Kaira: there have been only one or two admissions of a slight description." * * * * * *

"There are a few cases of dysentery recorded, but very simple and uncomplicated in character." * * * * * *

"Diarrhœa has been frequently observed, sometimes of a catarrhal character, and sometimes, particularly in the hot weather, the result of some derangement in the biliary secretions." * * * * * *

"Ophthalmia is very common in the Police Corps." * * * * * *

"Chronic rheumatism and indolent buboes and ulcers have been of frequent occurrence.

"A case of gangrene of the uterus was the consequence of drugs taken to procure abortion: the woman was brought into hospital in a dying state, and the *post-mortem* examination showed that the mortification had extended to the adjoining peritoneum and appendages of the uterus. The internal mucus surface of this organ was blackened, and its substance on section appeared colourless, and like a cartilaginous tumour. She was in the 5th or 6th month of pregnancy."

Dharwar.

"The crime of procuring abortion is very common in this part of the country, and the internal applications used for the purpose are generally the fresh juice of the milk bush and common red lead, (the protoxide,) which is sold in the bazars. These are introduced upon a little cotton wool, fastened to the end of a piece of straw, which, when it can be accomplished, is forced through the cervix into the cavity of the womb, and permitted to remain until expelled with the contents."

Kolapore.

"The treatment found most beneficial during the painful inflamed stage of guinea-worms (and especially when the position of the source of irritation was in the neighbourhood of a large joint) has been the application of tar poultices. These poultices are made by soaking pieces of bread in liquid tar.

"I consider it the best application at the early stages of the affection, as it appears to possess the power of soothing the pain, diminishing the swelling, and shortening the period before the discharge of the worm takes place. After the swelling and pain in these cases have subsided, simple water dressing is applied."

Tanna.

"Dracunculus has been of frequent occurrence, particularly amongst the sepoys of the Ghaut Local Infantry, but I have found the Bahar jamlee plant, one of the savine family, to be an infallible remedy, if applied before the worm breaks through the skin. It is used pounded with salt, and laid over the seat of the

worm for 18 or 24 hours. In a short time it raises a blister, from which issues a plentiful serous discharge, which is promoted by the application of poultices. After a few days the discharge ceases, the surface heals up, and all traces of the dracunculus disappear. I have now tried this treatment in twelve cases."

BOMBAY.

"I feel almost a doubt regarding noticing any remedy as exhibiting a markedly beneficial effect in cases of spasmodic cholera; at the same time I cannot but mention one which has been used in three of the cases—two very severe ones—in which recovery followed. I allude to chloric æther, which is most readily made by the addition of 14 drachms of rectified spirit to 2 of pure chloroform. I gave it in these cases in doses of half a drachm to a drachm in an effervescing draught, every half hour or hour, using at the same time external warmth and counter-irritants, and either alone or with other remedies.

"I have used it frequently as a stimulant and anti-spasmodic in smaller doses, in cases of colic and hysteria; and though I would speak with much diffidence of its effects in such a disease as cholera, yet the results in the cases in which I have used it have been so satisfactory, that I am inclined to attribute them in some degree to this remedy—other cases in which it was not used, though not so unfavourable in their first appearance, having, under almost precisely the same circumstances, proved fatal under different treatment."

No. 5.

Case of Transverse Presentation. By Assistant Surgeon T. B. BEATTY, 2nd Company 2nd Battalion Artillery.

Presented July 1852.

I WAS requested to see a Mussulman's wife who had been a considerable time in labour, and was considered in a dangerous and precarious state. On arriving at the house, some distance off, I elicited the following information:—The patient, aged 25, the mother of two children, was seized five days ago with labour pains, which, after having continued some hours, the liquor amnii escaped; the pains lasted with violence for 48 hours, and then ceased, after which she became exceedingly weak and exhausted, was able to take no food, and complained of great restlessness and anxiety. She remained in this state until the fifth morning, when her friends sent for a native, a farrier by trade, but who is applied to in all cases of emergency, and considered to be possessed of some degree of knowledge in the

curative art. On making his examination, he found the umbilical cord protruding, and of a dark colour, and having introduced his hand within the vagina, the fœtal arm was discovered emerging from the os uteri. This he endeavoured to push back, but failing in the attempt, he amputated it close by the shoulder. He then endeavoured to introduce his hand within the uterus, but finding it impossible to do so, he became alarmed, and begged I would lend my assistance. The woman at this time presented the following symptoms : pulse 180, small, and feeble ; tongue parched, and browned in the centre ; eyes sunken, and of a peculiarly ghastly appearance ; belly swollen, and slightly tympanitic. The umbilical cord protruded external to the vagina, was quite cold, and black. On digital examination, the vagina was found hot and dry, os uteri rigid and slightly painful, though capable of dilatation by the finger. On introducing the finger further within the uterus, it came in direct contact with the fœtus, the precise position of which, after some little difficulty, was ascertained : it lay on its left side, directly across the mouth of the womb, the belly looking towards the mother's spine. The parts tangible to the finger were—the axilla and ribs of the left side, the space between the ribs and iliac crest, and a portion of the abdomen. All endeavours to advance the hand further within the uterine cavity were found impossible : so firmly had the uterus contracted, that it appeared to have actually moulded itself upon the fœtal body, and presented such an insurmountable obstacle, that any hopes of effecting version was speedily given up. I then determined upon eviscerating the abdomen, and, if possible, to form the case into a breech presentation, which operation was performed in the following manner :—The bladder having been emptied, the left hand, well oiled, was gradually passed within the os uteri, and the exact position of the child's abdomen brought within its grasp. This being ascertained, Smellie's long scissors were passed along the palm of the hand, until its point reached the tip of the finger, the seat where the puncture was about to be made. The scissors were now, with the right hand, thrust into the abdomen, and their handles being opened, an aperture of sufficient magnitude was made, so as to permit the left hand entering its cavity. The intestine, and a large portion of the liver, were quickly removed, and by this means considerable space and room was gained, the body of the child being rendered more flexible, and much less bulky. The evacuation being completed, the left hand was again passed within the uterus, and the left groin of the child searched for, which was discovered lying in the left iliac fossa. Over it I carefully passed a blunt hook, which, having secured, I withdrew my hand, and at once commenced traction, taking care that it was made in the line of axis of the inlet of the pelvis. This was persevered in for fully half an hour, after which the breech appeared pressing on the perinœum. The crotchet was now passed over the groin, and the traction being directed in the axis of the outlet, the inferior extremities and body were delivered. I again introduced my hand within the vagina, and having passed the index finger into the child's mouth, I was enabled to direct the head into the hollow of the sacrum, and thus completed the delivery : the placenta and membranes quickly followed, after which the uterus gradually and slowly contracted, and without any flooding. Both the child and placenta were in a high state of decomposition, the former being of a livid black colour, and its skin pealed off on the slightest touch.

The subsequent treatment consisted in the administration of a full dose of opium at bed-time, and she was likewise ordered the following mixture :—

℞ Carb. ammonia ℥ij, spt. ammonia aromat. ℥iss, decoction cinchona ℥vij : ℥j of the mixture, with ℥ss of lime-juice every second hour.

The vagina was occasionally washed out with tepid water, and fomentations applied to the abdomen, and the woman recovered without a single bad symptom.

The above case may be considered interesting from its not being very frequent, and from the length of time which had elapsed (viz. five days) between the cessation of labour, evacuation of the liquor amnii, and the delivery by operation.

The treatment of transverse presentation will be found entirely dependent upon the time the malposition has been discovered. If, for instance, being called to a case early, and before the liquor amnii has escaped, we happen to detect a cross birth, there will not be much difficulty experienced in introducing the hand within the uterine cavity, and having broken the membranes, and laid hold of the feet, to complete the operation by turning. But in a case similar to the one under consideration, this was impossible, the waters had come away five days previous to any attempt at delivery : the soft parts, having been devoid of all laxity and moisture, had become dry and inflamed ; and so powerfully had the uterus now contracted on the child, that it was absolutely impossible to insert even the fingers between. There was no alternative but that which was adopted, and which accords with the rules laid down by Dr. Rigby in his " System of Midwifery," at page 172.

No. 6.

Annual Report of the 26th Regiment N. I., stationed in Upper Scinde. By J. F. Steinhauser, Esq., Assistant Surgeon.

Presented by the Medical Board.

An examination of the tabular returns for the official year ending April 1851 shows that the regiment has been healthy during the whole time it was quartered at Shikarpore and Larkhana. The admissions into hospital have not been numerous, and the casualties few. It will be observed that the largest number of cases treated have been febrile affections, and it may be inferred that the fevers were of a mild type, from the fact that only two casualties are recorded under this head. Both these, moreover, admit of a satisfactory explanation. In the first case (a European Serjeant Major) the fever assumed a dangerous form—the bilious remittent type. As the man generally suffered an exacerbation at night, which disturbed his rest, he was in the habit of inducing sleep by drinking a large quantity (8 ozs.)

of native spirit. It is not to be wondered that this injudicious practice produced the worst results. The second fatal case was where fever supervened on scurvy—a state of cachexia most unfavourable to the progress of any disease.

Fever, as it occurs in Scinde, even as an epidemic visitation, is, in general, a very tractable disease, when the treatment is prompt; hence the proportion of casualties to the number of cases treated is always small; but during the year 1850, which was a very healthy year in Upper Scinde, the fever was of a particularly mild type, rarely complicated with inflammation of internal organs. Far less tractable, although less dangerous, was the class of diseases under which the admissions, taking them numerically, succeed next in frequency, viz. ulcers and abscesses. No less than 160 men were rendered unavailable for duty from this cause alone, for periods varying from six days to as many months. The history of one of these cases represents the history of all. The affection may begin as a simple boil, from which a portion of dead cellular membrane is speedily detached, and which then slowly heals; or the healing process may suddenly be arrested, and sloughing may set in, destroying successively cuticular, muscular, and aponeurotic texture, with a rapidity only equalled by hospital gangrene. Between these extremes are many intermediate gradations. Cases of less severity are colloquially distinguished by the appellation of "Scinde boils." This tendency to phlegmonoid inflammation, followed by sloughing, is by no means confined to the province of Scinde, but prevails from Cutch to the North West Provinces of Bengal. Similar ulcers are also met with at Aden. It must not be supposed that these solutions of continuity always commence with furuncular inflammation; for where the constitutional predisposition to ulceration exists, a blow, a wound, a scratch, in fact any abrasion of surface, suffices to produce a sloughing ulcer. Thus leech-bites, the scarifications made in the operation of cupping, the puncture of phlebotomy, the scratch with the lancet for the insertion of vaccine matter, have all proved excitants; and blisters are in Upper Scinde so rife a cause of sloughing, that they are dreaded by natives, and avoided as much as possible by the medical practitioner. There is no characteristic in the appearance of the sores in question by which they can be distinguished from indolent and sloughing ulcers originating in other causes. The more severe cases are those where sloughing supervenes on the opening of a bubo, and, as might be expected, those in general complicated with a syphilitic taint. European officers and men, and natives of all castes, are liable to suffer, but the latter are attacked in a larger proportion than the former. Nor does long residence in the country appear to render the constitution capable of resisting the invasion. In fact, the more severe forms are to be met with among the natives of the country, and especially among the men of the two Belooch battalions. The 1st battalion of Beloochees is chiefly composed of Mussulmans from Cabul, Khandahar, and the Eusufzaie Country, and the 2nd battalion of Scindee Beloochees; whilst the two regiments of Scinde Irregular Horse on the other hand, consisting chiefly of Mussulmans from the Concan, Deccan, and Hindoostan, show comparatively few cases. Women and children seem to be less liable to this affection than men. These forms of ulcers are met with on all parts of the body, but they occur more frequently in situations furthest removed from the centre of circulation: they are more frequently seen on the extremities than on the trunk,

more frequently on the lower than on the upper extremities. They present themselves for admission into hospital at all seasons of the year, both in the cold and hot weather; but the number treated between the months of May and November so far exceeds the admissions during the other months of the year, that there can be no doubt that the protracted period of hot weather in Scinde and the adjacent countries predisposes to this affection. This opinion is further corroborated by the fact that many ulcers, which have been very intractable, suddenly begin to improve in appearance or to heal with the commencement of the cold weather. It may be that the equilibrium of the circulation is disarranged by the increased action of the peripheric capillaries, hence functional derangement of the internal viscera; further, that over-excitement of the capillary vessels is a source of their subsequent want of tone, hence local inflammation, attended with absorption of texture. The remote cause of this class of ulcers (excluding cases complicated with syphilis, scorbutus, scrofula, or other cachexiæ) is very obscure; but in most patients affected, functional derangement of the liver, and other chylopoetic organs, may be decidedly traced. Fever cannot be said to be a predisposing cause. Boils, followed by ulceration, certainly occur occasionally as complications and sequels of fever in Scinde as elsewhere, but a patient suffering from one or more of these ulcers may be attacked with fever, and the disease may run its course, without producing any sensible effect on the sore, excepting that whenever a paroxysm of fever occurs the healing process is arrested, or the sloughing aggravated. Further, the fever may be cured, but the ulcer remain in the same state in which it happened to be at the time of the first febrile attack. Nor can anything like periodicity be traced throughout the progress of one of these ulcers, from the first invasion until the commencement of granulation. When the process of granulation once begins, they generally heal steadily, and with rapidity. The constitution does not readily sympathise with the local affection: thus an ulcer of this description may remain for months stationary, *i. e.* without showing any disposition to heal; or sloughing even may take place, and yet the general health of the patient may not be much impaired; there may be no emaciation, or loss of strength. Where the process of disorganisation proceeds with rapidity over an extensive surface, or to a great depth, of course hectic symptoms make their appearance, and in the most unfavourable cases colliquitive diarrhœa soon closes the scene; but in the greater number of these sloughing ulcers there is but little constitutional derangement. This morbid condition of the body may be defined as a tendency to the ulcerative process, accompanied by little constitutional disturbance beyond functional derangement of the digestive organs; the ulcers being marked by an indisposition to granulate, and great proneness to assume a sloughing action.

The indications of treatment are plain and simple. The endeavours should be directed towards overcoming the constitutional derangement predisposing to ulceration, and towards altering the character of the sore, so as to induce granulation. To accomplish these purposes, however, is not always an easy task; for whatever means may be resorted to, these ulcers are slow to heal, and sloughing will frequently occur without any apparent cause, even in cases which seem to be progressing favourably. Numerous have been the remedies recommended to be taken internally, and to be used in the local treatment; but that they are not very

efficacious appears from the fact that of 138 cases treated, the average period of treatment is one month and twenty days. The internal treatment should tend to rectify the functional defect of the digestive organs. Experience proves this to be most readily effected by alteratives, such as the compound calomel pill, administered on alternate nights, or, according to circumstances, given at more lengthened intervals, and followed by tonics, in combination with laxatives, such as the bitter infusion, to which a proportion of infusion of senna may be added, with a sufficient quantity of any neutral salt to render their operation slightly laxative. Certain it is, that antiphlogistic treatment is hurtful in this disease. The object of the local treatment should be to induce healthy granulation. In simple cases this is easily accomplished by stimulating applications, of which the ungt. hyd. nit. oxid. or solution of nitrate of silver, or the resinous ointment, with which an equal quantity of turpentine is blended, are useful forms ; the latter dressing appears to be most generally useful. If granulation proceed too rapidly, or the granulations be soft, spongy, and large, the nitrate of silver is found to be the best application. Where there is sloughing, it is necessary to alter the action of the vessels surrounding the ulcer. In slight cases, this may be effected by rubbing in the nitrate of silver in substance, and by dressing afterwards with a stimulating ointment ; but in severe cases the whole surface of the sore should be touched with strong nitric acid, which proceeding should be followed by the application of emolient poultices, repeated until the slough is thrown off, when the resinous ointment and turpentine may be used with benefit. These cases should be removed, and kept as far as possible apart from the simple forms of ulcer, for it frequently happens that one of the latter sores, which had been granulating, and had a healthy appearance, suddenly becomes ill-conditioned, and assumes a sloughing character, when no cause can be assigned for these untoward circumstances beyond the fact that a case of sloughing ulcer was on admission placed next to the simple sore. It is impossible to say whether this disposition to slough is imparted to other ulcers by contact, or by atmospheric influence.

It is not an uncommon occurrence that in these cases, after the use of the acid, granulations form, but that the ulcer, which to all appearance is healing, suddenly resumes the sloughing character. Here the strong nitric acid should again be applied, and persevered with as often as this dangerous symptom recurs. Where the constitution sympathises with the local affection, or where hectic symptoms are present, it may be necessary to support the system with wine and cordials, or by the administration of bark and diffusible stimulants. Complications, and other modifying circumstances, to enumerate all of which would be too long, may render a deviation from this treatment advisable ; but the mode to be adopted in these cases is generally self-evident. Thus, in patients of a scorbutic diathesis, it were vain to expect the ulcers to heal until this constitutional defect is remedied by appropriate means. Or, again, bandages, of little benefit in ordinary cases of this affection, become useful where the veins of the limb are varicose on which an ulcer of the description under consideration may appear.

No. 7.

Cases of Strangulated Hernia.

Presented by the Medical Board.

CASE 1.—By F. LODWICK, Esq., Staff Surgeon, Neemuch.

A pauper, by name Tecka, aged about 50 years, was brought into the Staff Hospital on the 5th of June 1851, suffering from strangulated inguinal hernia. States that about fourteen days ago he fell from a tree, which caused the rupture. Bowels not open since the accident, and he has taken no food for sixteen days. Is much emaciated; abdomen greatly distended, and tympanitic; there is a very large and hard tumour extending from the inguinal ring to the bottom of the scrotum; skin of a shining appearance. The symptoms of strangulation becoming very severe, and after a short trial of the taxis, combined with the usual remedies for reduction, having been applied, without the slightest effect, in consultation with Drs. Malcolmson and Mackenzie, I performed the usual operation, by making an incision about four inches long from the neck of the tumour, carefully dividing all the coverings, and opened the sac, when a very large quantity of thin serous fluid of a brown colour escaped. The intestine appeared in a discoloured state. The seat of stricture was very firm, and required a free incision to enable the gut, which was of considerable size, to be returned. Copious mild injections at the same time were given. The testicle was exceedingly small. There was no bleeding; not a single vessel required a ligature. A few stiches were applied, and cold water dressing. He had a few doses of calomel and opium, for fear of inflammatory symptoms supervening. He took food the next day, and his appetite gradually improved; his bowels acted naturally, and no bad symptoms followed. Being a pauper, and having undergone so much, with such an unexpected favourable termination, I kept him in the hospital until he got into robust health, when he returned to his village.

CASE 2.—By W. C. COLES, M.D., Assistant Garrison Surgeon, Bombay.

A Tent Lascar, aged 45, of healthy constitution, was admitted into the Native Garrison Hospital between 6 and 7 A. M. of the 5th May 1852. States that yesterday at 3 P. M., when at work, he first became aware of some slight swelling and pain in the right groin, and that about 7 P. M. a portion of the gut came down. It has continued so since, and the pain has been increasing both in the swelling, and in the belly. He describes it as of a twisting character. Fomentations have been applied, but no medicine has been taken. The bowels have not been open since yesterday morning. The pulse and skin are good; he has eructations and inclination to vomit, and it is stated that he vomited yesterday, and in the night. On examination, it is seen that he has a large oblique inguinal hernia. The taxis is attempted, and steadily used for upwards of half an hour, but without

effect. A gurgling noise is occasionally heard, but no symptoms of reduction ; the intestine is very distinctly felt, and is not as yet very tender. An enema of castor oil and turpentine is given, and ice in a bladder constantly applied to the tumour.

11 A. M.—The patient is fully brought under the influence of chloroform, and the taxis again carefully and steadily used, but to no purpose. The sac is felt as very much thickened. The bowels have been opened once, some scybala only passing. Hiccup has come on. Repeat the enema, with ℥iss of sulphate of magnesia ; continue the ice application.

3 P. M.—The enema was retained an hour, when it brought away a little scybala ; hiccup continues ; pulse 80 ; pain very much complained of ; one grain of extract of opium to be taken now, and, if rejected, to be repeated. Repeat the enema.

5 P. M.—The symptoms of strangulation progressing ; hiccup, vomiting, and pain increasing ; the pulse becoming irritable, and the countenance anxious ; a consultation was held, and the operation determined upon. The patient was brought well under the influence of chloroform, and the ordinary operation performed. Before the sac was reached, several structures had to be successively divided. The sac contained a good deal of serum, slightly discoloured. The seat of stricture was at the external ring. It yielded readily to the knife, and was divided about a quarter of an inch. The intestine looked healthy, but slightly discoloured, firm, and of good consistence. Reduction having been effected, the sac was allowed to remain down, and the edges of the wound brought together by stitches, plaster, and compress. A figure of 8 bandage was applied round the loins.

8 P. M.—Has slept since ; some slight hiccup ; pulse improved ; skin natural.

6*th*.—Passed several dark grumous-looking stools during the night, and has vomited once or twice ; hiccup has come on at times—otherwise better ; pulse 60, soft ; skin natural ; countenance good ; abdominal tenderness little, and confined chiefly to the seat of operation. Dressing not removed. Let him have one grain of opium now, and at 12 o'clock if required.

Vespere.—The opium was not repeated. No stool since ; pulse and skin natural ; no pain.

7*th*.—Passed a good night : no vomiting, nor stool ; pulse 60, and rather low ; skin cool and natural ; complains of a little more pain, but it is chiefly in the wound ; no tenderness around.

8*th*.—A good night ; bowels opened once, stool natural ; no abdominal pain or tenderness ; tongue clean ; pulse improved.

14*th*.—Wound quite healed. Apply a truss.

20*th*.—Is quite well. Discharged.

No. 8.

Annual Report of the 19th Regiment N. I., for the year ending 31st March 1852. By D. WYLLIE, M.D., Assistant Surgeon.

Presented by the Medical Board.

ON the 1st of April 1851 there remained 21 cases in hospital. Up to the 31st of March 1852 the total admitted amounted to 734. The number treated during the year has thus been 755. Of these, 724 have been discharged, 7 have died, and 24 remained under treatment on the 1st of the present month. Of those discharged, 698 were cured, and returned to duty, 20 proceeded on sick leave, and 6 were invalided.

2. Of the total number admitted, a ratio of 62·26 per cent. were cases of intermittent fever. This complaint was but little observable until the beginning of August, from which period up to December it continued to prevail, affecting all classes and ages indiscriminately. On the other hand, the admissions from all other classes of disease have been pretty uniform throughout the different months of the year. On no occasion has duty appeared to be an exciting cause of these complaints, and, save in the cases of rheumatism, ulcer, and secondary syphilis, the influence of season and prevailing winds has been but little remarked.

3. Although the men, as far as duty bears on health, have been under more favourable conditions than during the preceding year, and have neither been subjected to the exposure nor fatigue incidental to marching, still there has been a marked increase in the amount of sickness for the past year. This increase is chiefly in the number of cases of intermittent fever. The daily ratio of sick, as well as the average duration of each case, has also been unusually high in proportion to the annual ratio, as contrasted with the three previous years. This is shown in the subjoined table, and, as far as fever cases are concerned, this result is less attributable to any severity in the form of complaint than to subsequent debility, and consequent slowness of recovery, which has generally characterized even comparatively slight attacks.

Table showing the Daily and Yearly Ratio of Sick per cent. to Strength, in the 19th Regiment, for the past four years.

Year.	Daily Ratio of Sick per cent. to Strength.	Yearly Ratio of Sick per cent. to Strength.	Average duration of each Case in days.	Where stationed.
1848-49 ..	3·24	167·15	9·52	Scinde and Punjaub.
1849-50 ..	4·86	123·96	10·63	Peshawur, Punjaub, and Scinde.
1850-51 ..	1·96	53·41	13·45	Kurrachee and Kolapoor.
1851-52 ..	3·88	88·89	15·93	Kolapoor.

4. As regards the short average duration of each case during the two first years shown in the table, contrasted with that for the past year, the difference is certainly chiefly owing to circumstances connected with the nature of the men's

duties on active service, as contrasted with a life in garrison. In the field, or on the line of march, when the duty is arduous, many slight foot-sore, and other trifling cases, are necessarily admitted in a sick report. Moreover, from the requirements of the service at such times, a sick man is at once obliged to seek assistance, and hence there is almost always an opportunity afforded of combating disease at its very outset; whereas in cantonments, where duty is light, the sepoy very often does not present himself at hospital till his turn of guard duty comes round, and the lighter the duty, the greater likelihood of delay until disease becomes fairly developed, and thus the probabilities of protracted sickness are greatly increased.

5. Making every due allowance, however, for this fact, the average duration of 15·93 days, as shown for the past year, is certainly high for the usual run of cases in a regimental hospital. The excess appears chiefly referable to frequent relapses in the cases of fever, to weakness induced by repeated attacks, and to these I may add also the exhausting effects of climate so generally witnessed after some stay in one locality. These various causes have been operating in rendering convalescence tedious and prolonged, and have in part, doubtless, been influenced and aided by the very defective and inadequate accommodation provided for the sick, which for some period was barely sufficient for the comfortable reception of half the patients, and thus involved the necessity of occasional crowding, when the state of weather did not admit of their living in tents.

6. The large proportion of fever cases during the autumn months seems attributable rather to causes connected with an objectionable site of camp, and developed by an unusual amount of rain, than to any peculiar influence of season itself. The local corps stationed at Bhowrah, a distance of three miles, continued healthy, while fever was extensively prevalent among all classes in camp. Again, it was remarked that those occupying houses in elevated localities enjoyed a comparative immunity, while those living in low situations, and in the neighbourhood of marshy grounds, suffered severely.

7. The chief objections in site, in a sanatory view, may be classed under the following heads :— 1st, general lowness of position ; 2nd, the immediate vicinity of two large sheets of water; and 3rd, the existence of extensive cultivation in the middle of camp, as well as in the immediate neighbourhood.

8. The general aspect of the ground is undulating or hilly, and intersected by water-courses. The more elevated parts are rocky, or but thinly covered by a sprinkling of soil, while in the lower levels there is commonly a considerable depth of rich alluvial soil, and in these situations cultivation is industriously pursued. During the prevalence of rain these grounds are quite flooded, inasmuch as they receive the fall from the more raised and rocky localities, where there is little or no soil to absorb it ; and from the circumstance of the cultivated parts being surrounded by banks to retain the water for the growth of rice, the ground is thus submerged, or remains in a swampy state for months together. Such was the condition of a considerable tract of land (lying in the very centre of camp) from June to the end of October, during the past season ; and I have no doubt that the acknowledged malarious influence generated under such circumstances was a leading cause of the prevalence of fever throughout the period.

9. A similar cause, equally likely to produce fever, although, perhaps, from position, operating less powerfully, exists in the two large sheets of water already referred to, but more particularly from the vicinity of that called Rankhala, which during the last rains overflowed the low rice ground, stretching behind the officers' lines, to the extent of several hundred yards. The large body of stagnant water thus produced had hardly disappeared in January, and the ground continued marshy for weeks afterwards.

10. The influence of lowness of position was less marked among the men than in the cases of several of the European officers. The native lines are built on a somewhat raised and gently sloping rocky ridge. The men have thus, as respects position, been under pretty equal circumstances, and there was consequently little room for comparison as regarded them. But in the officers' lines this influence was clearly shown in the severe and constantly recurring attacks of fever from which the inmates of houses in low situations suffered; while those living in high localities were comparatively but little affected.

11. Perhaps another cause, aiding the effects of locality in the production of fever, existed in the condition of the men's lines, many of the huts being in a ruinous condition; the chuppurs so decayed as to be scarce fit to exclude the sun, far less to afford adequate shelter during heavy rains. This defective condition of the lines was not overlooked, but the rumoured likelihood of the site of camp being about to be changed tended to retard the work of rebuilding, which was scarce half completed when the rains began. It did not, however, appear that those occupying these old huts suffered in any particular degree from fever beyond the others, although out of 11 cases of cholera that took place among camp followers living in the regimental lines, all, without exception, occurred in those wretched huts.

12. Season and prevailing winds, while exercising comparatively but little observable effect on the other classes of diseases, have still very materially affected the cases of fever. The influence of an unusual fall of rain, in conjunction with local circumstances, has already been referred to as a cause of the prevalence of the complaint during the autumn months. The effects of heat and cold in modifying the type of attack have been distinctly marked in the tendency to cerebral complication, and in the general resemblance to the remittent or continued forms, shown in many of the cases treated during the hot months, as well as in the distinctly marked stages, the well-defined intermission, and the frequent occurrence of rheumatic and catarrhal symptoms, that have characterized the disease in the cold season. The influence of prevailing winds, as affecting health, has not been less observable. From February to June a fresh sea breeze is regularly experienced, beginning about 3 P. M., and blowing steadily till nearly midnight. This breeze has a buoyant and invigorating effect on the spirits, ensures cool nights, and appears equally healthful as it is grateful to the feelings. On the other hand, the unwholesome influence of easterly winds, particularly in November and December, was well exemplified, not only in a great increase in the amount of admissions, but also in the frequency of relapse in fever, and the large number attacked of those under treatment during the prevalence of the wind.

13. Twenty-two recruits have been enlisted. Of this number two only were

Hindoostan men, the remainder Concanees and Mahrattas. Notwithstanding much care in their selection, and that many of them were natives of adjacent districts, in whose cases the influence of change of climate could scarce be operating, still the proportion of fever cases among these men was greatly in excess, compared with that furnished by the other classes composing the regiment. I have no reason to believe that the comparative light drill duty was the cause of this, but am rather inclined to connect it with low living, inadequate clothing, and a want of other comforts (which the sepoy enjoys !)—a state of matters springing less from any expenses entailed for regimental equipments, than from the circumstance that most recruits are in debt at the period of joining.

14. Twenty men proceeded on sick certificate, with leave varying from two to four months. These cases were chiefly fever, rheumatism, and secondary syphilis. Of those sent to the sea coast (Rutnagherry) all have benefitted, while the majority of the others have returned from their native villages little if at all improved by the change. Out of the number two died, one from phthisis, the other from intermittent fever.

15. There have been 7 deaths, being a ratio of 92 per cent. to treated—little more than half the proportion of the preceding year, when the ratio of deaths to treated was 1·73. Out of 445 cases of intermittent fever, only one death has occurred, the case of a recruit who died suddenly, with symptoms of effusion on the brain, induced by exhaustion, consequent on repeated attacks. Of two fatal terminations of apoplexy, one was the case of a habitual drunkard, where the attack followed a debauch ; the other supervened in a man who had recently suffered from a severe attack of fever, accompanied by cerebral symptoms. One death occurred from pneumonia. The patient, a weakly man, formerly the subject of bronchitis, applied for admission, after several days' illness. The symptoms had little character of urgency, but still resisted the most active treatment, and terminated in well marked gangrene of the lung. The death from phrenitis was the case of a recruit, who was not brought to hospital till the disease was fully developed. The patient, it was stated, had been seized with fever two days before. There was no history to show how far the complaint may have been connected with exposure. The two remaining fatal cases occurred respectively from remittent fever and cholera.

16. Headache, nausea, and bilious vomiting, occasionally followed by yellowness of eyes, have been ordinary accompaniments in the cases of intermittent fever. The usual statement of the patient, on admission, is that he has been suffering for several days from weakness, languor, pains in the loins and limbs, and loss of appetite. After a varying interval these symptoms are followed by shivering, and a paroxysm of fever ; the cold stage, marked by nausea and bilious vomiting ; the hot fit by headache, urgent thirst, and burning sensation at the stomach. It was usually at this period of its development—the first or second days of attack—that the patients presented themselves at hospital. It was generally observed that the irritability of stomach and bilious characteristics were more marked in Purdessies than in Mahrattas or Concanees, in whose cases headache, giddiness, and constipation of the bowels were more common features. This peculiarity was attributed to the general use of dall as an article of food by the former, as contrasted with the rice and wheaten diet of the others. In many, however, of both

classes, the attack occurred in a simple form, its progress unmarked by any other symptoms than those which strictly belong to the different stages.

17. The quotidian type of fever has generally yielded to treatment, after five or six days. The symptoms have invariably been most severe at the outset, when the paroxysm has often resembled the continued or remittent form. The intermission, however, has seldom been delayed beyond the second day, and then under the influence of remedial measures the complaint has gradually disappeared, or passed into the tertian type, in which form it has often proved obstinate. The simple cases, in which no local symptoms existed, and where the intermitting character of the attack was distinctly marked from the beginning, were generally more tedious than the others, and showed a more decided tendency to relapse during convalescence.

18. The more prominent symptoms, bilious vomiting, nausea, sensation of burning at stomach, and urgent thirst, have always been most marked at the commencement of the attack, and have, as a general rule, subsided within one or two days after the intermission has been established. Moreover, these symptoms were generally only witnessed during the first occurrence of the complaint, and have rarely happened to any noticeable extent in relapses, or during subsequent seizures. Headache and giddiness, on the contrary, especially when accompanied with a sense of fullness, or throbbing, are symptoms that have frequently proved obstinate ; often persisting for days after the febrile symptoms have been subdued, and requiring active measures for their relief.

19. The treatment has been necessarily modified according to the period of duration of the complaint, and the character of the symptoms that have marked it. A purge has generally been given on admission, and when irritability of stomach has existed, this has been preceded by a sedative dose (gr. x) of calomel ; and occasionally, when headache, languor, or nausea have been present, an emetic has been administered. When the attack has resembled the continued or remittent form, it has often been necessary to give calomel in alternative dose, or combined, with antimony (R. Calomel gr. iii, pulv. Jacob. gr. ij 1) ; and this has been repeated at intervals as long as the condition of the secretion indicated its use, or until the intermission has appeared. The persistence of local symptoms has been treated by leeching, and blistering when the head has been affected, and sinapisms over the stomach, together with effervescing draughts, containing laudanum or morphia, in those cases of irritability of stomach where sedative doses of calomel have failed to control the symptom. When the cold fit has been severe, an emetic at the outset has frequently been employed with benefit, but more particularly the stimulant draught advised by Dr. Roots (R. Tinct. opii m xl, spirit. ammoniæ arom. ℥ij, mist. ; camphoræ ℥ij), which at the commencement has often appeared to cut short the stage. When these remedies have failed, and the cold fit has proved unusually prolonged and severe, leeches applied over the spleen, aided by a free action from the bowels, have been attended with marked relief, and occasionally in tertian cases, where fulness in the hypochondrium, or enlargement of the organ, has existed, a blister has been applied with success. The hot stage has been treated by saline and diaphoretic draughts, sponging with vinegar and water to the chest, head, and extremities, and the unrestrained use of that best of

diluents, cold water. During the intermission quinine, to the extent of from 10 to 15 grains daily, has proved as usual a powerful remedy ; its use, however, has been limited to severe and obstinate cases. The liquor arsenicalis, given in doses of 9 or 10 drops thrice daily, has often been used with advantage, more particularly where headache and giddiness contra-indicated the exhibition of quinine : bark or chreat have generally proved sufficient to control the ordinary forms of the complaint, and have been the remedies chiefly employed, and, aided by mineral acid, colchicum, or sesquicarbonate of ammonia, have been used with much advantage in the prolonged weakness that has so generally followed the attack.

20. Only one out of three admissions from apoplexy has been successfully treated—the case of a stout, robust man, who was siezed while in bed. The antiphlogistic treatment was strictly pursued, and blood drawn freely from both arms. Blisters, sinapisms, and brisk purgation by croton oil, were the other remedies employed, and complete recovery resulted. In both the other cases the prognosis was particularly unfavourable. Hemiplegia, with loss of speech, followed a debauch over night, in the case of a man of intemperate habits, and thus the state of matters was not discovered till morning. Leeching to the temples, a blister to the nape, active cathartics, with enemata, and sinapisms to the extremities, were the remedies prescribed. Towards afternoon coma supervened. Calomel was now employed, with a view to affect the system, and mercurial ointment sedulously rubbed on the thighs. Stimulants, in small doses, were also directed. His condition, however, gradually became more hopeless ; coma deepened, and the patient died utterly insensible to all external influence. Similar remedies were used in the fatal case that supervened on fever, save that leeching was more sparingly employed.

21. The treatment of rheumatism is only referred to in connection with Dr. Ree's remedy, (lime-juice,) which has been tried in three cases. With one exception, little or no decided result attended its employment, although it was pushed to the extent of 18 and 20 ounces daily. The case alluded to was a well marked illustration of the complaint, attended by sharp fever, a bounding pulse, high coloured urine, redness, tenderness, and swelling of the knee joints, with pains affecting the muscular system generally, but more particularly severe in the thighs and legs. These symptoms gradually subsided under the use of the remedy, and disappeared on the third day, no medicine having been given, save a purge on admission. It is not unlikely but that some syphilitic taint may have tended to mar its effects in the other cases.

22. Eight cases of consecutive syphilis have been admitted, the form of disease resembling chronic rheumatism, affecting the bones, and pereocteum, but more particularly involving the tibia, the knee, and ankle joints, and attended by dull aching pains, swelling to the joints, emaciation, night-sweats, and loss of sleep. The treatment of this complaint has been least satisfactory of all. A variety of local applications, together with sudorifics, sedatives, mercury, hydrodate of potash, sarsaparilla, mineral acids, and tonics, as well as change of air, have been tried, but in several instances only with temporary benefit. When once fairly developed in the sepoy, this disease appears very frequently to lead to inefficiency ; for, favoured in many instances by defective diet, and insufficient

clothing, it becomes very difficult to eradicate it from the constitution. The man may return for a time to his duty, but when subjected to exposure or fatigue, or even by the influence of change of season, it is constantly recurring, and ultimately one or more of the affected joints generally becoming permanently enlarged, he is invalided, the cause perhaps ascribed to chronic rheumatism. When the regiment was stationed at Kurrachee in 1850, the men so affected were permitted to visit the neighbouring hot springs at Muggur Peer, from bathing in which remarkable benefits resulted. This simple form of remedy, aided by occasional fumigations with cinnabar and camphor, with morphia to procure rest, will often prove a most efficacious mode of treatment.

23. There were several cases of cholera among the women and followers of the regiment, which necessarily do not appear in the returns. These, as well as the fatal case shown, were treated by the usual remedies—calomel, stimulants, frictions and warmth to the surface, counter-irritation over the stomach, opiates, enemata, and the unrestrained use of cold water. In two of them, when the stage of collapse had occurred, and recovery seemed exceedingly doubtful, the nitrate of silver was given, as recommended by Mr. Moore of Gwalior. *(London Medical Gazette for* 1850.*)* The remedy was given in doses of 1 grain, and repeated at intervals of an hour, until the urgent symptoms subsided. Both cases recovered favourably.

24. Seven cases of acute dysentery were admitted, and all terminated favourably. The urgent symptoms that mark this condition compel the patient to seek timely relief, and thus, unlike many other cases of visceral complaint, (more particularly of the lungs,) where disease is not unfrequently far advanced before admission, there is generally an opportunity of treating dysentery at its outset. Hence the comparative success of practice in military hospitals, and the infrequency of the chronic form. On admission a full dose of calomel (gr. x) combined with opium (gr. ij) in form of pill, has generally been given, and this followed after four hours by castor oil. (Ol. ricini ℥vi, *c.* tinct. opii m vi ex. aqua mentha ℥ij.) Alterative doses of mercury, in combination with diaphoretics and opium, (usually pil. hydrarg. pulv. Doveri ā ā gr. ij, pulv. ipecac. et extract. opii ā ā gr. ss, m ft pil. j,) have then been used, and repeated at intervals of two or three hours, according to the severity of the symptoms. At the end of 24 hours the castor oil has usually been again administered, and after its operation the pill re-continued, gradually extending the intervals as the symptoms subsided, and repeating the castor oil on alternate days, until healthy evacuations are obtained. Under this treatment the complaint generally disappears on the fourth or fifth day. When the symptoms persist beyond this period, sulphate of copper in half grain doses, added to the pill, has been followed by marked success. Local pain has been treated by leeches, followed by fomentations and poultices, and for the relief of tenesmus leeching to the perineum, with opiate enemata and opositories. When the disease has threatened to assume the chronic form, a blister to the abdomen has been employed with benefit. During convalescence, tonic infusions, with diluted nitric acid, or colchicum, and the occasional use of the nitro-muriatic acid bath, has been the mode of treatment adopted.

25. The cases of ulcer, although numerous, have been with few exceptions of

a trivial nature, and have chiefly resulted from phlegmon, and abrasions caused by ill-fitting shoes. Although trifling, they have often proved tedious, especially during continued rains, when the restorative process has often appeared suspended, the simplest sores resisting all the usual remedies, sometimes retrograding, but more generally remaining for weeks together unchanged. A similar effect, although to a less marked extent, was observed in those suffering from fever. Three cases of obstinate ulceration, characterized by depressed and irregular surface, smooth, pale, everted edges, profuse serous discharge, itchiness, and burning sensation, rather than pain, extensive induration of the surrounding cellular membrane, and a tendency to cicatrize at one side, while spreading in another direction, were brought to a successful termination (after many local and constitutional remedies had been tried in vain) by an ointment made from the leaves of the *ruta graveolens*, an application highly efficacious in such cases, from its stimulating and deobstruent virtues.

26. The infrequency of dracunculus forms a peculiarity in the admissions of the year the more remarkable as the complaint is common among the natives of the district, and even of frequent occurrence in the civil charge at Bhowrah. Only two cases were treated, and both happened in recruits, in whom the disease appeared shortly after enlistment. The fact seems to show that considerable length of residence is necessary to its developement, as it is now nearly a year and a half since the regiment left Scinde.

No. 9.

Bi-chloride of Mercury in the Treatment of Syphilitic Buboes. By T. B. Beatty, Esq., Assistant Surgeon.

Presented August 1852.

There are few more troublesome cases which the Surgeon can be called upon to treat than buboes, in complication with either gonorrhœa or primary syphilitic sores.

Whether on account of the specific cause of their inflammation, or the peculiar structure of the parts of it, is difficult to assert; but that these glands, situated along Poupart's ligament, when they become inflamed either from absorption of the venereal virus or from irritation conveyed along the lymphatics, do show a ready tendency to suppurate, and subsequently to burrow, and form sinuses beneath the skin, with frequently an indisposition to heal, is too well known to need further comment.

To derive the hoped for special stimulating property which the bi-chloride of mercury exerts, attention must be paid to the particular stage at which the bubo has arrived, before its application is to be attempted. It is when the gland has suppurated, and when certain indications of pus are present, that the greatest benefit will result from its use. I have never seen it applied at the commencement of the inflammation, or when the gland is small, hard, and painful, nor do I imagine that at this incipient stage much benefit would accrue from its application; but frequently have I seen cases of bubo, when a large collection of pus had formed, and when the skin covering it had become thin and tense, (the Surgeon scarcely considering himself justifiable in not at once plunging in a lancet and evacuating the matter,) end in resolution, the pus become absorbed, and the case give no further trouble; and that after a single application of the corrosive sublimate.

The mode of treatment is simple: a piece of lint, about two inches long, and one broad, is dipped in a 10 grain solution of the bi-chloride of mercury, and laid on the bubo. The only directions given to the patient are to keep it constantly moist with the solution, and as long on as he can bear it. In a short time it begins to smart considerably, and generally after an hour he takes it off, being unable to endure the pain any longer. This period is quite sufficient for any beneficial result which may be expected. On the following morning, the cuticle will be found raised, and the skin beneath will present a florid, granulating appearance: nothing need be now applied but cold water dressing, which in the majority of cases above described will alone be sufficient to complete the cure.

When cases of incipient syphilitic bubo are admitted into hospital, it is no doubt good practice to attempt their dispersion by means of cold lotions and leeches, assisted by purgatives and antimonials; but these means frequently fail; and if after two or three days' trial no progress has been made, I have generally found that much time and trouble will be saved by at once forwarding the abscess as speedily as possible by means of poultices and fomention, and then, assured that pus has collected, to apply the solution of corrosive sublimate as directed.

No. 10.

Annual Report of the Jail Hospital, Dharwar, for the year ending the 31st March 1852. By G. F. Forbes, Esq., Civil Surgeon, Dharwar.

Presented by the Medical Board.

Cholera made its appearance in the jail on the 25th of May last year, and continued with more or less intensity up to the middle of June. The disease was first heard of at a small village about five miles to the north-east of this station,

and soon afterwards it communicated with the town of Dharwar. Its form at the commencement was so virulent that upwards of three-fourths of the inhabitants attacked were carried off by it. Every precaution was at once adopted to prevent any communication with the prisoners, but this proved of little avail, as the first cases that occurred were amongst those employed at in-door labour, and the epidemic appeared to have laid especial hold of the locality in the immediate neighbourhood of the jail compound, where its ravages were more severely felt, and of longer continuance than in any other part of the city. Shortly afterwards it extended to the populous town of Hooblee, twelve miles distant, containing about 50,000 inhabitants, and, apparently holding a direct course to the south-east, passed through the whole length of the Collectorate, upwards of 100 miles, leaving a large district on either side untouched. By returns from different talookas it appeared that throughout the Collectorate 5,259 individuals were attacked, and 3,373 died.

The 6th Regiment Madras N. I., as well as their camp followers, escaped the epidemic, although it raged in the immediate vicinity of their lines and huts. This the sepoys attributed to their being at a cheap station, where their means enabled them to provide an abundant supply of good and wholesome food for themselves and their large families ; and the circumstance might afford a useful comment on the causes which render the regiments of that Presidency so proverbially prone to this disease.

The total number of cases admitted into hospital amounted to 69, out of which 21 casualties occurred, the greater number of the latter being old and worn-out prisoners : of these, five cases may have been said to have withstood the shock of the disease, but ultimately sunk under debility and diarrhœa. The epidemic in its worst form was characterized by the entire absence of vomiting, purging, or spasms, and by a rapid collapse, in which nature seemed to sink without an effort ; the stomach appearing as inert as a piece of wet paper, and quite insensible to the effects of the strongest stimulants or medicines. Some of the victims to this form were stout and robust young men, and I must confess that I felt utterly unable to cope with the disease, or to combat a single symptom successfully. I selected a few cases apparently suitable for trial, of some of the modes of treatment lately favourably recommended, including cold water, &c. ; the result, however, was a conviction in my own mind that the safest general rule was to trust to the influence of calomel, administered at first in large doses as a sedative, two or three of which seldom failed in allaying the irritability of the stomach, and afterwards to continue it to the extent of 5 to 10 grains, combined with a little Dover's and aromatic powder, or compound powder of chalk, every half hour, or according to the urgency of the case, until the safety of the patient was so far secured by the re-appearance of bile in the secretions,—this of course, in conjunction with the usual auxiliary means of stimulants, frictions, hot baths, venesections, and occasionally emetics, as the indication of each individual case might require. As prophylactic measures during the prevalence of the disease, every possible attention was paid to the comfort of the prisoners, in the regulation of their diet, clothing and labour ; and by frequent inspections, any individuals suffering from diarrhœa or derangement of the general health were at once brought under treatment.

The native doctors of this place pursued rival modes of practice with their patients. One set, immediately on the appearance of the disease, administered a mixture of the juices of limes, onions, and green ginger, constantly rubbing the body and limbs with hot ashes ; and, as soon as the stomach would receive it, sour milk or butter-milk was given *ad libitum*. The opposite faction stuck to cold water, and plied it with a vigour fully equal to the zeal of their more enlightened brethren : the patient was usually taken to the bank of a tank, and copiously drenched, externally and internally, until his fate was decided.

With the exception of such as occurred from cholera, the casualties during the past twelve months have been considerably less than the average of the five preceding years, amounting only to 16·20 per cent. of the strength of the prisoners, and to 14·52 of the number of cases treated. Two fatal cases occurred in the month of May, one of which was that of an elderly woman, taken with diarrhœa. Her constitution had been previously destroyed by the effects of syphilis, and the abuse of mercury, and she sunk rapidly under the attack. In June three casualties occurred, two of the prisoners being of the respective ages of 80 and 85 years. In July one prisoner, a stout young man, died from acute dysentery, and the remaining two cases in October and February were the subjects of chronic disease, and died from debility and exhaustion.

The admissions from quotidian intermittent fever (the prevailing disease) have been somewhat greater than the usual average, amounting to 323, out of which one casualty occurred. The majority of cases have been mild and tractable, yielding readily to the usual remedies. From December till March may be stated as the season for this disease, and during these months it prevails to a great extent amongst the natives, but, as far as I can ascertain, it is not the cause of great mortality. One peculiarity which I have observed is the frequency with which it attacks young children, who at other places are usually supposed to be exempt from this disease. The natives treat the disease with purgatives, generally the Teegodee (*Sponidea surpettiam*), and subsequently use a febrifuge decoction of the Margozo tree (*Melia azadirachta*) and Bullarda, or yellow Myrobalan (*Spondias myrobalanus*).

Excoriations from irons, and guinea-worm, are, next to intermittent fever, productive of the greatest number of admission to hospital ; the former will, I have no doubt, soon be of less frequent occurrence, as the convicts are being provided with a suitable leather protection to their legs. The latter disease is confined almost entirely to prisoners recently admitted ; those who have been some time imprisoned are singularly exempt, considering the extent to which the natives of this country are subject to this troublesome affection.

No. 11.

Portions of the Annual Report of the Garrison and Civil Hospital, Belgaum, for the year ending 31st March 1852. By T. WALLER, Esq., Staff Surgeon.

Presented by the Medical Board.

"THE principal admissions have been from fever, chiefly of an intermittent type. The treatment pursued has been already detailed in former reports; and the only point I conceive it necessary to remark on is the beneficial operation of emetics, not only given at the commencement, but repeated during the course of the disease. Some of the fevers might have been truly called bilious, for in most cases large quantities of bile were discharged; but as intermissions of the febrile paroxysms occurred, most cases were included among the intermittent class. I have generally given the emetics when headache has been complained of, and the countenance looked jaundiced; and have observed in by far the greater number of cases that the fever has not yielded to treatment until free bilious vomiting or purging took place, the most obstinate cases have been those assuming an icteroid type, and in these repeated emetics have been given, and I think with almost invariably satisfactory results: febrifuge remedies have seldom appeared useful, until bile has been freely discharged. A combination of quinine gr. ij, pulvis cinchonæ ij, and strong infusion of chreate, with a few drops of tinctura piperis nigri has been given during the intermission."

"The following case may perhaps be of interest:—A slight-made, healthy Mahratta, a Shikharee, had been most severely wounded 10 years previously by the bursting of his gun, while shooting wild hog at night. All the wounds healed but one, at the front of the left elbow joint: the joint was found to be anchylosed, and a small opening was observed, as large as a pea; in this a hard foreign body could be easily felt, a probe passing deep upwards of an inch interiorly and laterally. I dilated the wound freely, thinking that with a little cautious depression this firmly impacted body could be removed. It lay exactly over, and was apparently connected with, the joint; a good deal of troublesome hæmorrhage resulted, and extremely firm traction with a pair of strong forceps made no impression whatever in loosening the foreign body, and as deeper depression would, in all probability, have risked wounding the radial or ulnar artery, and, perhaps, ultimately caused amputation of the limb, which was partially useful, I thought it best to desist, and try the effect of producing suppuration about the foreign body, and consequent loosening of the sac which it had evidently formed: the incisions were kept dilated with narrow strips of lint smeared with cerate, and a few drops of a mixture of diluted sulphuric acid, with four parts of water, was daily allowed to trickle down the hard substance, which appeared to be a part of the barrel of the gun. As I anticipated, the action of the acid on the metal was very satisfactory: a dark-coloured deposit in the wound was daily squeezed out, and the forceps used, the parts being dilated with the lint. When threatening of inflammation

was observed, the acid drops were omitted for a day or two : in about a week an obvious loosening had taken place, and the dark body advanced more to the surface, and in about three weeks it was finally removed by a trifling incision. It proved to be a portion of the barrel—a circular piece of the whole circumference of the gun, an inch in length, much indented on one side, and very thin, the latter doubtless occasioned by the action of the acid. The wound rapidly healed, and I am in hopes, even after ten years, that partial movement of the joint may gradually return.

"Another interesting case occurred in a Portuguese cook, who had attempted suicide by hanging : the man was cut down, and brought to Hospital in a state of insensibility, the eyes deeply blood-shot, and bearing a mark of the rope round the neck. A semi-maniacal state followed the insensibility. He was purged, bled freely from the arms, and subsequently took an emetic. Leeches were also applied to the head, as the symptoms resembled delirium tremens, and as it was suspected he had been drinking ; sedatives combined with stimulants were given. Under this treatment the man recovered, and was discharged from hospital. The rope mark at first had a bruised appearance ; in a few days it resembled a burn or blister, then partial disquamation ensued, and a red surface was observed below. The effusion of blood about the conjunction was a long time in disappearing.

PROCEEDINGS

OF THE

MEDICAL AND PHYSICAL SOCIETY OF BOMBAY

FOR THE YEARS 1851 AND 1852.

FOR THE YEAR 1851.

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The DEPUTY INSPECTOR GENERAL OF HER MAJESTY'S HOSPITALS.

President,

J. MCLENNAN, M.D.

Vice-Presidents,

M. STOVELL, Esq. C. MOREHEAD, M.D.

Committee of Management,

The PRESIDENT. The VICE-PRESIDENTS.
J. SINCLAIR, Esq. A. H. LEITH, M.D.
R. D. PEELE, Esq. H. J. CARTER, Esq.

Secretary,

J. PEET, Esq.

The following gentlemen were elected Ordinary Members of the Society, under Regulations V. and VII. :—

C. C. Mead, Esq. ; J. F. Watson, M.D. ; J. Bain, M.D. ; T. B. Beatty, Esq. ; F. G. Joynt, Esq. ; W. E. Wood, Esq.

The following letters were read :—

From Dr. McLennan, on his election as President of the Society.

From Messrs. Leckie and Co., the Treasurers of the Society, forwarding their Account for 1850.

From the Agents of Dr. Hyslop, forwarding his Subscription.

From Sir George Ballingall, forwarding a copy of an article upon Hospitals.

From the Secretary to the Medical Board, thanking the Society for a copy of Dr. Giraud's article on the Analysis of Opium.

From Dr. Murray, resigning his Membership on departure from India.

From J. Pirie, Esq., relative to his Subscription.

From the Secretary to the Medical Board, forwarding a Report upon Baghdad, by Assistant Surgeon Hyslop, M.D.

From ditto ditto, forwarding some Cases of Snake-bites.

From ditto ditto, forwarding a Case, showing the Effects of certain Remedies in Cholera.

From ditto ditto, forwarding the Annual Reports of the Civil Surgeons.

From ditto ditto, forwarding the Annual Reports of the European General, and Jamsetjee Jejeebhoy Hospitals.

From ditto ditto, forwarding the Annual Report of the 26th Regiment N. I.

From ditto ditto, forwarding the Annual Report of the 11th Regiment N. I.

From ditto ditto, forwarding a Case of Fracture of the Humerus, from Gunshot Wound.

From Dr. Bremner, tendering his resignation of Membership, on departure from India.

From Dr. Murray, thanking the Society for electing him a Corresponding Member.

From Dr. Hall, Deputy Inspector General of Her Majesty's Hospitals, thanking the Society for copies of the Society's Transactions, and expressing his gratification at being officially connected with the Society.

Original Communications, presented by the Authors.

1. *On the Analysis of Opium for Medicinal purposes. By H. Giraud, M.D.
2. *Notes on an Opium-eater. By M. Stovell, Esq.
3. *Notes on moving Troops. By F. S. Arnott, M.D.
4. Remarks on Beriberi. By C. Morehead, M.D.
5. *Notes on the Climate of the Cape of Good Hope. By M. Stovell, Esq.
6. Cases of Fracture treated in the Surgical Clinical Ward of the Jamsetjee Jejeebhoy Hospital. By J. Peet, Esq.
7. *Post-mortem Examinations in Dysentery. By M. Stovell, Esq.
8. A Case of Paralysis. By J. Peet, Esq.
9. Notes on Abnormal Præcordial Dulness, supposed to be related to Enlargement of the Spleen. By C. Morehead, M.D.
10. *Three Cases of Hydrophobia. By J. Peet, Esq.
11. *Medical History of the 1st Bombay European Regiment, during its service in the Punjaub. By F. S. Arnott, M.D., Surgeon to the Regiment.
12. *Notes on Bright's Disease of the Kidney. By C. Morehead, M.D.

Communications presented by the Medical Board.

1. *Medical Topography of Baghdad.
2. Annual Report of Civil Surgeon, Tanna, for the year ending 31st March 1851.
3. Four Fatal Cases of Snake-bite (Phoorsa).
4. *Annual Report of the European General Hospital, Bombay, to 31st March 1851.

* Published in the last volume of the Transactions.

5. Annual Report of the Jamsetjee Jejeebhoy Hospital, Bombay, to 31st March 1851.

6. *Case of Fracture of the Humerus, from a Gunshot Wound, with ligature of the Subclavian Artery.

7. Case showing the Effects of Remedial Agents in Cholera.

8. Annual Report of the 26th Regiment N. I.

9. Case of Private Ram Salee Sokool.

10. Annual Report of the 11th Regiment N. I.

Donations to the Library.

1. Dublin Quarterly Journal of Medical Science, Nos. XIX. XX. and XXI. Presented by the Editor.

2. Report of the Grant Medical College, for 1850-51. Presented by the Principal.

3. Meteorological and Magnetical Observations made at the Observatory, Colaba, Part II. of 1847. Presented by Government.

4. Practical Observations, &c. By Professor Lizars. Presented by Dr. Buist.

5. Observations on the Site and Construction of Hospitals. By Sir G. Ballingall, Professor of Military Surgery, Edinburgh.

FOR THE YEAR 1852.

Patrons, ex-officio,

The Medical Board of Bombay.

The Deputy Inspector General of Her Majesty's Hospitals.

President,

J. McLennan, M.D.

Vice-Presidents,

M. Stovell, Esq. C. Morehead, M.D.

Committee of Management,

The President. The Vice-Presidents.
A. H. Leith, M.D. R. D. Peele, Esq.
H. J. Carter, Esq. W. C. Coles, M.D.

Secretary,

J. Peet, Esq.

During the year, R. D. Peele, Esq., and J. Peet, Esq., resigned their seats on the Committee, upon leaving India ; and W. Campbell, M.D., and C. C. Mead, Esq., succeeded them in rotation. W. C. Coles, M.D., elected *Secretary*.

* Published in the last volume of the Transactions.

The following gentlemen were elected Members of the Society, under Regulation V. :—

F. Harrison, Esq.; C. D. Straker, M.D. & C.B.; J. E. Batho, Esq.; S. M. Pelly, Esq.; C. F. Collier, Esq.; W. Pitcairn, M.D.; W. H. Bradley, Esq.; J. Craig, Esq.; C. R. O. Bloxham, Esq.; R. Woosnam, Esq.; G. R. Ballingall, M.D.; M. Cruickshank, Esq.; J. Bean, Esq.; W. Davey, Esq.

Under Regulation VII. :—

A. V. Ward, Esq.; C. T. Thomson, M.D.; H. Roome, M.D.; A. Fyfe, M.D.; J. Glen, Esq.; R. W. James, M.D.; T. M. Lownds, M. D.; H. O. Thorold, Esq.; G. Sandwith, M.D.; J. M. McKenzie, M.D.; A. L. Williams, Esq.; J. Kaye, Esq.; J. P. Stratton, Esq.; G. Naylor, Esq.; A. M. Rogers, Esq.

The following letters were read :—

From Messrs. Leckie & Co., the Treasurers of the Society, forwarding their Account for 1851.

From Dr. Wiche, acknowledging the receipt of the Society's Transactions.

From the Secretary to the Medical Board, forwarding successful cases of operation for strangulated hernia.

From ditto ditto, forwarding a Case of Peritonitis, occurring in the 2nd European Light Infantry, at Belgaum.

From the Secretary to the Geographical Society, acknowledging the receipt of Vol. X. of the Transactions.

From the Private Secretary to the Right Honorable the Governor, acknowledging similar receipt.

From the Principal of the Grant Medical College, ditto ditto.

From the Secretary to the Medical Board, forwarding a communication relative to the frequency of Paralysis at Malligaum.

From the Superintendent of the Government Observatory, Bombay, forwarding a copy of the Magnetical and Meteorological Observations made at the Observatory during the year 1848.

From the Secretary to Government in the General Department, conveying the sanction of Government to the bill for 100 copies of Vol. X. of the Society's Transactions.

From H. Deane, Esq., announcing his withdrawal from the Society.

From the Secretary to the Medical Board, referring (at the request of the General Paymaster) to articles of Dead Stock in the possession of the Society.

From H. Pitman, Esq., requesting his name may be removed from the list of Members.

From Mr. A. Dunlop, upon being appointed Agent for the sale of the Society's publications.

From the Secretary to the Grant College Medical Society, forwarding Remarks upon Tetanus, by J. Peet, Esq.

From the Secretary to the Bombay Branch Royal Asiatic Society, presenting No. XV. of the Journal Bombay Branch Royal Asiatic Society.

From the Secretary to the Medical Board, acknowledging the receipt of two copies of the General Index to the Society's Transactions.

From the Secretary Geographical Society, acknowledging the receipt of two copies of the Index.

From M. Style, Esq., applying for certain back numbers of the Transactions.

From the Secretary to the Medical Board, forwarding Returns showing the Sickness and Mortality among the European Troops of the Bombay Presidency, between the years 1830 and 1846, compiled from the Records of the Medical Board Office by Mr. Webb, Hospital Steward.

From Messrs. Leckie & Co., on the business of the Society, with reference to its Accounts.

From the Secretary to the Medical Board, forwarding a printed copy of a Report on Fever and Dysentery by Assistant Surgeon Hare, of the Bengal Establishment; the Annual Reports of the European General and Jamsetjee Jejeebhoy Hospitals; the Annual Report of the Tanna Civil Surgeoncy, and Police Corps Bombay.

From B. A. R. Nicholson, Esq., with reference to his name having been inadvertently removed from the list of Members, and requesting its continuance.

From F. Harrison, Esq., J. E. Batho, Esq., S. M. Pelly, Esq., A. J. Montefiore, Esq., C. D. Straker, M.D. & C.B., C. F. Collier, Esq., W. Davey, Esq., J. Pirie, Esq., W. Pitcairn, M.D., W. H. Bradley, Esq., J. Craig, Esq., C. R. O. Bloxham, Esq., R. Woosnam, Esq., G. Ballingall, M.D., M. Cruickshank, Esq., and J. Bean, Esq., intimating their wish to become Members of the Society, upon payment of Donation and Subscription.

From P. Hockin, Esq., thanking the Society for a copy of the Index to the Transactions.

From J. Pirie, Esq., relative to his Subscription.

From W. B. Johnstone, Esq., requesting to withdraw from the Society.

From the Secretary to the Medical Board, forwarding certain papers and documents for the use of the Society.

From the Principal of the Grant Medical College, transmitting the last Report of the College, and an Introductory Lecture to the Session 1851-52.

From the Officiating Secretary to the East India United Service Club, enclosing a copy of a list of Members of the Club.

From the Secretary to the Medical Board, forwarding the Annual Reports of the Civil Surgeons at Kaira, Broach, and Dhoolia.

From ditto ditto, forwarding a communication from Assistant Surgeon Vaughan, relative to Drugs procured near and exported from Aden.

From ditto ditto, forwarding certain Cases for the use of the Society.

From M. McKenzie, Esq., on being elected an Ordinary Member of the Society.

From the Secretary to Government in the General Department, forwarding a Report upon the Climate and Diseases of Kolapore, by F. Broughton, Esq.

From the Secretary to the Medical Board, forwarding the Annual Reports of the Garrison Hospital Belgaum, and Jail Hospital Dharwar.

From ditto ditto, transmitting a Case of Perforation of the Intestines by a Lumbricus.

From Mr. Richardson, Bookseller, London, with respect to the Transactions.

From the Secretary to the Medical Board, forwarding a Case of Hepatic Abscess opened externally.

From Mr. Webb, Hospital Steward, Ahmednuggur, returning a copy of his article on the Sickness and Mortality among the European Troops for correction.

From the Secretary to the Medical Board, with respect to two Cases of Cholera on board the Hon'ble Company's S. V. Zenobia.

From the Secretary to the King's College, London, acknowledging the receipt of the last four volumes of the Transactions.

Original Communications, presented by the Authors.

1. Cases selected from the Hospital Practice of the 1st Fusiliers, for 1851. By F. S. Arnott, M.D.
2. A Contribution to Dietetics. By A. H. Leith, M.D.
3. A. Case of Pneumonia. By T. B. Beatty, Esq.
4. Medical History of the Central Schools, Bombay. By H. J. Carter, Esq.
5. A Case of Transverse Presentation. By T. B. Beatty, Esq.
6. Ditto ditto ditto. By W. C. Coles, M.D.
7. Cases of Abscess in the Liver. By M. Stovell, Esq.
8. Notes on Pericarditis, Endocarditis, and Organic Disease of the Heart. By C. Morehead, M.D.
9. On the use of Bi-chloride of Mercury. By T. B. Beatty, Esq.

Communication presented by the Grant College Medical Society.

1. Report on Cases of Tetanus admitted into the Jamsetjee Jejeebhoy Hospital.

Communication presented by Government.

1. On the Climate and Sanatory condition of the State of Kolapore.

Communications presented by the Medical Board.

1. Cases of Strangulated Hernia.
2. Case of Chronic Peritonitis, and Disease of the Mesentery.
3. Notes on the frequency of Paralysis at Malligaum.
4. Statistical Tables of, and Remarks upon, the Sickness and Mortality of European Troops in the Bombay Presidency.
5. Annual Report of the European General Hospital, Bombay, to 31st March 1852.
6. Annual Report of the Jamsetjee Jejeebhoy Hospital, Bombay, to 31st March 1852.
7. Annual Report of the Civil Surgeon, Tanna.
8. Ditto ditto Police Corps, Bombay.
9. Ditto ditto Civil Surgeon, Kaira.
10. Ditto ditto ditto Broach.
11. Ditto ditto ditto Dharwar.
12. Fatal Case in Civil Hospital, Ahmedabad.
13. Notes upon some Articles of the Materia Medica procured near, and exported from Aden.
14. Annual Report of the 17th Regiment N. I.
15. Ditto ditto 29th ditto.
16. Ditto ditto Civil Surgeon, Dharwar.
17. Case of Vulnus Incisum.
18. Case in Civil Hospital, Rajcote.

19. Fatal Case in 17th Regiment N. I.
20. Annual Report of the 2nd Regiment E. L. I., at Belgaum.
21. Ditto ditto Garrison and Civil Hospital, Belgaum.
22. Cases of Abscess of the Liver, opened externally.

Donations to the Library.

A copy of the Magnetical and Meteorological Observations during the year 1848. Presented by Government.

A copy of "Deaths in Bombay," by Dr. Leith. Presented by Government, through the Medical Board.

A copy of No. XV. of the Journal of the Bombay Branch Royal Asiatic Society. Presented by the Society.

A copy of a Report on Fever and Dysentery, by Assistant Surgeon Hare, of the Bengal Establishment. Presented by the Medical Board.

A copy of No. XIV. of the Dublin Quarterly Journal of Medical Science. Presented by the Editors.

"Typhus Contagieux des Bêtes à Cornes." By M. Bojer, Vice-President Royal Society of Arts and Sciences, Mauritius.

Geology of the Island of Bombay. Presented by H. J. Carter, Esq., Assistant Surgeon.

REGULATIONS

OF THE

MEDICAL AND PHYSICAL SOCIETY OF BOMBAY.

ESTABLISHED 1835.

Objects.

I. The encouragement of the cultivation of Medical Science and its collateral branches, by discussion at periodical meetings, and by the publication of original communications.

Constitution.

II. The Society is composed of Ordinary, Corresponding, and Honorary Members.

Ordinary Members.

III. Under the head of Ordinary Members are to be classed all who contribute to the funds of the Society, and all who are admitted in accordance with Regulation VII.

IV. All Medical men residing in India, who can produce certificates of a regular medical education, are eligible as Ordinary Members.

V. Medical Officers of Her Majesty's or the Hon'ble Company's Service are elected Ordinary Members of the Society, on application by letter addressed to the Secretary.

VI. Qualified Medical Practitioners, not belonging to Her Majesty's or the Hon'ble Company's Service, are elected by ballot at the ordinary meetings of the Society, and a majority of three-fourths of the Members present is necessary to secure the election.

VII. Assistant Surgeons, on first entering the Bombay Medical Service, are considered Ordinary Members of the Society, free of the payment of admission fee and annual subscription, and continue so for a period of two years, after which, should they not intimate their wish to be considered Ordinary Members by payment of the regulated admission fee and annual subscription, they are considered to have withdrawn from the Society.

Payments.

VIII. Ordinary Members to pay an admission fee of Rs. 5, and an annual subscription of Rs. 12, payable in advance in the month of January of each year.

IX. Ordinary Members, absent from India, are not chargeable with subscriptions for the period of their absence.

X. Ordinary Members, neglecting to pay their annual subscription for two successive years, are considered to have withdrawn from the Society, and are liable to have their names erased from the List of Members, under a resolution passed to that effect at an ordinary meeting of the Society.

Corresponding Members.

XI. Ordinary Members, on retiring from service in India, on being proposed and seconded at an ordinary meeting of the Society, are eligible, by ballot, as Corresponding Members. A majority of four-fifths of the Members present is necessary to secure their election.

Honorary Members.

XII. Medical men of celebrity, not residing in India, are eligible as Honorary Members. On being proposed and seconded at an ordinary meeting of the Society, they may be elected at the next meeting by the unanimous consent of the Members present.

Election of Office-bearers.

XIII. The Committee of Management of the Society consists of eight Members, elected annually from among the Ordinary Members resident in Bombay by the general vote of the Ordinary Members residing under the Government of Bombay.

XIV. The Voting Lists are circulated in the first week of November of each year, and the result of the election is declared at the next ordinary meeting of the Society.

XV. In the event of vacancies occurring in the Committee between the periods of election, such vacancies to be filled up in rotation by the individuals who commanded the number of votes next to those of the Members returned at the last election.

XVI. A President and two Vice-Presidents of the Society are elected annually from among the Members of the Committee of Management by the Members of the Society present at the ordinary meeting at which the annual election of the Committee is declared.

XVII. The Secretary of the Society is elected biennially from among the Ordinary Members resident in Bombay, at the ordinary meeting held in the month of January of alternate years, or, on the occurrence of a vacancy, at any other ordinary meeting of the Society.

Committee of Management.

XVIII. The Committee of Management have the general direction of the affairs of the Society, and decide on what communications are to be published in the Transactions of the Society. They keep minutes of all their proceedings, which are entered into the Minute-book of the Society, and read at the following ordinary meeting.

XIX. When questions of importance to the stability and interests of the Society arise, such shall be submitted by the Committee for decision to the Ordinary Members residing *under the Government of Bombay*. The majority of votes necessary to decide any question to be determined according to its importance, and fixed at the time by the Committee.

XX. It shall form part of the duty of the Committee to give due consideration to all suggestions offered by Members of the Society.

President and Vice-Presidents.

XXI. The President shall take the chair, and conduct the business at all meetings of the Society.

XXII. In the absence of the President, one of the Vice-Presidents shall take the chair, and conduct the business of the meeting ; and in case neither be present, the senior Member at the meeting shall preside.

Secretary.

XXIII. The Secretary is a Member of the Committee of Management *ex-officio*.

XXIV. It shall be his duty to enter into the Minute-book of the Society minutes of the proceedings of all meetings and transactions of the Society, and, in communication with the Committee of Management, to conduct the details of business, and carry on the correspondence of the Society.

XXV. The Secretary shall prepare an annual statement of the receipts and disbursements of the Society, to be laid before the ordinary meeting in the month of January of each year.

XXVI. To enable the Secretary to perform these duties, a suitable establishment is entertained, under the sanction of the Committee of Management, confirmed at an ordinary meeting of the Society.

Meetings.

XXVII. Ordinary meetings of the Society are held in Bombay on the first Saturday of every month.

XXVIII. The chair being taken, the order of business shall be as follows :—

1. The minutes of the last meeting, and those of subsequent Committee meetings, to be read and confirmed.
2. The announcement and election of new Members, in accordance with Regulations V. VI. and VII.
3. The election of Corresponding and Honorary Members.
4. The reading of letters, and the discussion of any ordinary business of the Society which may be before the meeting.
5. The announcement of presents and donations.
6. That of papers and dissertations received since the last meeting.

XXIX. After the announcement of the papers and dissertations, the President shall call upon the Secretary to read one or more of them, and shall subsequently invite the Members to discuss any particular part of them which they may consider deserving of remark.

XXX. No new business shall be introduced until that which is before the meeting has been concluded.

Papers and Dissertations.

XXXI. All papers and dissertations presented to the Society to be considered the property of the Society.

XXXII. The Transactions of the Society are published by the Secretary in communication with the Committee as often as circumstances will admit.

XXXIII. A copy of each publication is presented to the Honorary and Corresponding Members of the Society, and to every Ordinary Member who, at the time of publication, is a contributor to the funds of the Society.

N.B.—The Medical Board has kindly permitted that letters and communications on the business of the Society, to the address of the Secretary to the Society, may be transmitted, *under cover*, to the Secretary to the Medical Board. In this manner they will pass free of postage, but not otherwise.

Members are requested to pay the amount of their subscriptions to Messrs. LECKIE and Co., Treasurers to the Society.

☞ The Publications of the Society are for sale at Mr. A. DUNLOP'S, Rampart Row, the Society's Agent.

The First Series of the Transactions of the Society consists of—

No. 1, 1838.....	Pp. 370	Rs. 5
,, 2, 1839.....	,, 269	,, 5
,, 3, 1840.....	,, 225	,, 3
,, 4, 1841.....	,, 156	,, 3
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,, 7, 1844.....	,, 206	,, 3
,, 8, 1845-46.....	,, 122	,, 3
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,, 10, 1849-50.....	,, 338	,, 5
The Index to the above.....		,, 1

The Second Series consists of—

No. 1, 1851-52.....	Pp. 356	Rs. 5

MEDICAL AND PHYSICAL SOCIETY OF BOMBAY,

FOR THE YEAR 1853.

Patrons.

The MEDICAL BOARD OF BOMBAY.

The DEPUTY INSPECTOR GENERAL OF HER MAJESTY'S HOSPITALS, BOMBAY.

President.

J. MCLENNAN, M.D.

Vice-Presidents.

M. STOVELL, Esq. C. MOREHEAD, M.D.

Committee of Management.

The PRESIDENT, the VICE-PRESIDENTS, and the SECRETARY.

A. H. LEITH, Esq. W. CAMPBELL, M.D.

H. J. CARTER, Esq. H. GIRAUD, M.D.

Secretary.

W. C. COLES, M.D.

Honorary Members.

J. A. PARIS, M.D., D.C.L., V.P.R.S., President of the Royal College of Physicians, &c., London.

RICHARD BRIGHT, M.D., F.R.S., Consulting Physician to Guy's Hospital, Physician Extraordinary to the Queen, &c., London.

MARSHALL HALL, M.D., F.R.S., Foreign Associate of the Académie de Médecine of France, &c., London.

C. J. B. WILLIAMS, M.D., F.R.S., Late Professor of Medicine, and First Physician to University College Hospital, &c., London.

SIR B. BRODIE, D.C.L., F.R.S., Sergeant Surgeon to the Queen, &c., London.

SIR GEORGE BALLINGALL, M.D., F.R.S.E., Regius Professor of Surgery in the University of Edinburgh.

R. CHRISTISON, M.D., V.P.R.S.E., President of the Royal College of Physicians, Edinburgh.

W. P. ALISON, M.D., F.R.S., Professor of Medicine in the University of Edinburgh.

J. SYME, Esq., F.R.S.E., Regius Professor of Clinical Surgery in the University of Edinburgh, and President of the Royal College of Surgeons, Edinburgh.

R. J. GRAVES, M.D., M.R.I.A., &c. Dublin.

J. W. CUSACK, M.D., &c., Steven's Hospital, Dublin.

Corresponding Members.

J. Burnes, K.H., F.R.S.
J. Glen, Esq.
A. Henderson, Esq.
H. Johnstone, Esq.
R. H. Kennedy, Esq.
J. Murray, Esq.
G. Smyttan, Esq.
J. Walker, Esq.

(Late of the Bombay Medical Service.)

R. H. Hunter, M.D., *Staff Surgeon, H. M.'s Service.*

Ordinary Members.

W. Arbuckle, M.D., Surgeon, Bombay Medical Service.
F. S. Arnott, M.D., Do. do. do.
*J. Bain, M.D., Assistant Surgeon do.
G. R. Ballingall, M.D., Do. do. do.
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T. Boycott, Esq., Do. do. do.
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A. Burn, M.D., Surgeon do.
W. H. Bradley, M.D., Do. do.
C. R. O. Bloxham, Esq., Do. do.
W. Campbell, M.D., Assistant Surgeon do.
H. J. Carter, Esq., Do. do. do.
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J. Craig, Esq., Surgeon do.
M. Cruickshank, Esq., Assistant Surgeon do.
J. Daubeny, Esq., Do. do. do.
W. Davey, Esq., Do. do. do.
R. H. Davidson, Esq., Surgeon do.
J. Don, M.D., Superintending Surgeon do.
E. T. Downes, Esq., Surgeon, Bengal do.
W K. Fogerty, Esq., Surgeon in Bombay.
*A. Fox, Esq., Assistant Surgeon, Bombay Medical Service.
*A. Fyfe, Esq., Do. do. do.
H. Giraud, M.D., Do. do. do.
*J. Glen, Esq., Do. do. do.
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F. Harrison, Esq., Surgeon do.
J. M. Hyslop, M.D., Assistant Surgeon do.
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*R. W. James, M.D., Do. do. do.
*J. Joynt, Esq., Do. do. do.
*J. Kaye, Esq., Do. do. do.
J. Keith, M.D., Do. do. do.
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*T. M. Lownds, M.D., Assistant Surgeon do.
G. Mahaffy, Esq., Do. do. do.
G. P. Maitland, Esq., Do. do. do.
J. McAlister, Esq., Do. do. do.
T. McKenzie, Esq., Surgeon do.
J. McKenzie, Esq., Do. do.
*M. McKenzie, Esq., Assistant Surgeon do.
J. McLennan, M.D., Physician General, Bombay Medical Service.
C. C. Mead, Esq., Assistant Surgeon do.
H. Miller, M.D., Surgeon in Bombay.
J. R. Miller, Esq., Assistant Surgeon, Bombay Medical Service.
J. Mills, Esq., Do. do. do.
C. Morehead, M.D., Surgeon do.
J. Murray, Esq., Assistant Surgeon do.
*G. Naylor, Esq., Do. do. do.
B. A. R. Nicholson, M.D., Surgeon do.
W. Neilson, M.D., Do. do.
R. D. Peele, Esq., Assistant Surgeon do.
J. Peet, Esq., Do. do. do.
S. M. Pelly, Esq., Do. do. do.
J. Pirie, Esq., Do. do. do.
W. Pitcairn, M.D., Surgeon do.
J. W. Reynalds, Esq., Assistant Surgeon do.
D. Ritchie, Esq., Surgeon do.
*A. M. Rogers, Esq., Assistant Surgeon do.
*H. Roome, M.D., Do. do. do.
*G. Sandwith, M.D., Do. do. do.
J. Scott, Esq., Superintending Surgeon do.
M. Stovell, Esq., Surgeon do.
M. Style, Esq., Assistant Surgeon do.
C. D. Straker, M.D., Insptr. Genl. of Hopls. do.
*J. P. Stretton, Esq., Assistant Surgeon do.
W. B. Taylor, Esq., Surgeon General do.
W. Thom, Esq., Assistant Surgeon do.
M. Thompson, Esq., Surgeon do.
*C. Thomson, M.D., Assistant Surgeon do.
*H. O. Thorold, Esq., Do. do. do.
T. Waller, Esq., Surgeon do.
*A. V. Ward, Esq., Assistant Surgeon do.
J. F. Watson, M.D., Do. do. do.
J. Welsh, Esq., Do. do. do.
B. White, Esq., Surgeon do.
*A. L. Williams, Esq., Assistant Surgeon do.
C. G. Wiche, M.D., Do. do. do.
J. W. Winchester, M.D., Surgeon do.
*W. Wood, Esq., Assistant Surgeon do.
R. Woosnam, Esq., Do. do. do.
A. Wright, Esq., Surgeon do.
D. Wyllie, Esq., Assistant Surgeon do.
J. Yuill, Esq., Surgeon in Bombay.

* Members under two years. Vide Regulation VII.

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Page	61,	line	12	from top, *for* " add" *read* " ad"
,,	63,	,,	16,	*for* " 1851," *read* " 1850,"
,,	69,	,,	23,	*for* " 99·914" *read* " 100·000"
,,	80,	,,	18,	*for* " first-mentioned period" *read* " May, June, and July"
,,	87,	,,	17,	*insert* " 17·146"
,,	97,	,,	9,	*under* " Aden" *for* " 0·234" *read* " 0·254"
,,	101,	,,	11,	*dele* " the first"
,,	312,	,,	9	from bottom, *for* " terms" *read* " liver"

TABLE A.

BOMBAY.

Table of the Sickness and Mortality among the European Troops (Queen's and Company's) stationed in Bombay, between the Years 1830 *and* 1846 : *showing the Average Number of Admissions and Deaths, and the Ratio of Admissions and Deaths to Strength, from the principal Diseases, for each Month throughout the Year.*

	Average Strength.	Fevers.				Pulmonic Affections.				Diarrhœa.				Dysentery.				Cholera.*				Hepatic Affections.				Other Diseases.				Total.			
		Average number of Admissions.	Average number of Deaths.	Ratio of Admissions per 1000 of Strength.	Ratio of Deaths per 1000 of Strength.	Average number of Admissions.	Average number of Deaths.	Ratio of Admissions per 1000 of Strength.	Ratio of Deaths per 1000 of Strength.	Average number of Admissions.	Average number of Deaths.	Ratio of Admissions per 1000 of Strength.	Ratio of Deaths per 1000 of Strength.	Average number of Admissions.	Average number of Deaths.	Ratio of Admissions per 1000 of Strength.	Ratio of Deaths per 1000 of Strength.	Average number of Admissions.	Average Number of Deaths.	Ratio of Admissions per 1000 of Strength.	Ratio of Deaths per 1000 of Strength.	Average number of Admissions.	Average number of Deaths.	Ratio of Admissions per 1000 of Strength.	Ratio of Deaths per 1000 of Strength.	Average Number of Admissions.	Average number of Deaths.	Ratio of Admissions per 1000 of Strength.	Ratio of Deaths per 1000 of Strength.	Average number of Admissions.	Average number of Deaths.	Ratio of Admissions per 1000 of Strength.	Ratio of Deaths per 1000 of Strength.
An Average of 8 years—1830, 1832, 1834, 1835, 1836, 1840, 1841, and 1842. January	968.000	35.500	1.000	36.673	1.033	8.375	0.125	8.651	0.129	8.125	0.500	8.392	0.516	24.25	3.875	25.051	4.003	0.750	0.125	0.774	0.129	13.000	1.000	13.429	1.033	80.375	1.625	83.032	1.678	170.375	8.250	176.007	8.522
February	896.882	29.353	0.583	32.727	0.655	6.411	0.411	7.148	0.459	9.705	0.294	10.821	0.327	15.235	2.411	16.986	2.689	1.117	0.294	1.246	0.327	7.764	1.353	8.657	0.852	66.529	1.411	74.178	1.574	136.117	6.176	151.765	6.886
March	949.941	46.176	1.058	49.229	1.114	7.294	0.353	7.678	0.371	10.823	0.529	11.393	0.557	13.941	2.823	14.675	2.972	2.823	0.941	2.972	0.990	8.235	0.588	8.669	0.743	92.529	0.823	97.405	0.866	182.411	7.235	192.024	7.616
April	899.176	49.941	0.529	55.541	0.588	7.411	0.411	8.242	0.457	10.176	0.117	11.317	0.130	12.588	1.529	13.999	1.700	4.764	1.647	5.298	1.831	8.411	0.764	9.354	0.850	101.470	1.471	112.848	1.635	194.764	6.470	216.603	7.196
May	965.647	52.411	0.705	54.276	0.730	8.176	0.470	8.467	0.487	9.705	0.117	10.051	0.121	11.176	1.000	11.574	1.035	3.588	1.588	3.715	1.644	9.647	0.588	9.990	0.609	95.941	1.764	99.354	1.827	190.647	6.235	197.429	6.457
June	976.353	87.470	2.117	89.589	2.168	7.411	0.411	7.591	0.421	13.882	0.294	14.218	0.301	15.588	1.294	15.965	1.325	5.823	2.353	5.964	2.409	6.294	0.353	6.446	0.361	87.588	1.529	89.709	1.566	224.058	8.353	229.485	8.555
An Average of 17 years, from 1830 to 1846, inclusive. July	950.117	111.529	2.529	117.384	2.662	9.117	0.588	9.596	0.619	18.000	0.235	18.945	0.247	25.882	2.235	27.241	2.352	4.470	0.941	4.705	0.990	7.000	0.353	7.367	0.371	80.647	1.588	84.881	1.671	256.647	8.470	270.121	8.915
August.....	986.882	87.705	2.411	88.871	2.443	7.823	0.588	7.927	0.596	15.764	0.176	15.974	0.178	19.058	1.588	19.312	1.609	10.588	2.647	10.728	2.682	6.294	0.353	6.377	0.357	82.000	1.411	83.089	1.430	229.235	9.176	232.282	9.298
September ..	885.647	75.882	1.176	85.680	1.328	5.411	0.294	6.110	0.332	11.705	0.235	13.217	0.265	14.882	1.058	16.803	1.195	3.235	1.117	3.653	1.261	5.941	0.411	6.708	0.464	70.647	0.647	79.768	0.730	187.823	4.941	211.942	5.579
October	963.000	140.528	2.647	145.928	2.748	7.764	0.470	8.063	0.488	14.235	0.411	14.782	0.427	20.117	1.705	20.895	1.770	1.647	0.294	1.710	0.305	5.764	0.529	5.986	0.549	76.294	0.764	79.225	0.794	266.353	6.823	276.586	7.085
November ..	1140.647	133.470	2.000	117.013	1.753	11.941	0.411	10.468	0.360	15.470	0.176	13.562	0.154	29.411	2.588	25.785	2.269	0.823	0.176	0.721	0.154	10.470	0.470	9.179	0.412	100.117	1.470	87.772	1.289	301.705	7.294	264.504	6.394
December.. ..	1081.882	90.941	2.353	84.058	2.174	8.882	0.941	8.210	0.869	17.176	0.235	15.876	0.217	50.941	7.941	47.085	7.340	1.000	0.353	0.924	0.326	12.235	1.176	11.309	1.087	82.353	1.823	76.120	1.685	263.529	14.823	243.584	13.701
Total for the Year.....	972.014	940.906	19.113	956.969	19.396	96.016	5.473	98.151	5.588	154.766	3.319	158.548	3.440	253.069	30.047	255.366	30.259	40.628	12.476	42.410	13.048	101.055	7.938	103.471	7.688	1016.490	16.326	1047.381	16.745	2623.664	94.246	2662.334	96.204

* The types of Cholera were not distinguished from each other in the "Returns of Sick" earlier than 1839. These columns, therefore, include both; but the prevalence and mortality from Spasmodic Cholera alone will be shown in a separate table.

Note.—To avoid the possibility of carrying on errors, the "Averages" have not been used in calculating the "Ratios," but they have been worked out from the Total Strength and Admissions, or Deaths; also, to ensure accuracy, by affording opportunity for testing one calculation by another, the Total Ratios of each Month have been determined in the same manner as those of each Disease, and, therefore, will be found to exceed by between .003 and .040 that obtained by adding the different Ratios together.

	Rain.	Thermometer.			Barometer.‡			
	Fall of Rain in Inches, an average of 34 years.*	Range of the Thermometer.†		Mean Temperature.†	Average Daily Maximum.	Average Daily Minimum.	Mean.	Average Daily Range.
		1843.	1844.					
January	None.	19.3	17.9					
February ..	,,	14.7	20.7					
March	,,	15.2	16.6		29.683	29.610	29.647	.073
April	,,	11.1	12.9					
May	,,	9.4	10.0					
June	22.13	9.5	12.8	81.1				
July	24.88	9.8	9.2					
August	16.77	8.4	8.5					
September..	11.05	11.2	10.7		29.963	29.832	29.897	.131
October	1.25	10.8	15.2					
November...	None.	16.5	19.0					
December ..	,,	17.5	18.0					
Total....	76.08	24.2	27.2					
		For the Year.						

* *Bombay Times Calendar* of 1851. † Colonel Sykes' Meteorological Report, 1850.

‡ Abstract of Observatory Report, *Bombay Times*, 22nd November 1851.

TABLE B.

POONA.

Table of the Sickness and Mortality among the European Troops (Queen's and Company's) stationed in the Poona Division, between the years 1830 *and* 1846 : *showing the Average Number of Admissions and Deaths, and the Ratio of Admissions and Deaths to Strength, from the principal Diseases, for each Month throughout the Year.*

	Average Strength.	Fevers.				Pulmonic Affections.				Diarrhœa.				Dysentery.				Cholera.				Hepatic Affections.				Other Diseases.				Total.			
		Average number of Admissions.	Average number of Deaths.	Ratio of Admissions per 1000 of Strength.	Ratio of Deaths per 1000 of Strength.	Average number of Admissions.	Average number of Deaths.	Ratio of Admissions per 1000 of Strength.	Ratio of Deaths per 1000 of Strength.	Average number of Admissions.	Average number of Deaths.	Ratio of Admissions per 1000 of Strength.	Ratio of Deaths per 1000 of Strength.	Average number of Admissions.	Average number of Deaths.	Ratio of Admissions per 1000 of Strength.	Ratio of Deaths per 1000 of Strength.	Average number of Admissions.	Average number of Deaths.	Ratio of Admissions per 1000 of Strength.	Ratio of Deaths per 1000 of Strength.	Average number of Admissions.	Average number of Deaths.	Ratio of Admissions per 1000 of Strength.	Ratio of Deaths per 1000 of Strength.	Average number of Admissions.	Average number of Deaths.	Ratio of Admissions per 1000 of Strength.	Ratio of Deaths per 1000 of Strength.	Average number of Admissions.	Average number of Deaths.	Ratio of Admissions per 1000 of Strength.	Ratio of Deaths per 1000 of Strength.
An Average of 5 years—1830, 1832, 1834, 1835, and 1836 — January	2595.000	69.6	1.400	26.882	0.539	14.800	0.400	5.703	0.154	15.600	None.	6.011	None.	9.600	None.	3.699	None.	0.200	None.	0.077	None.	13.400	0.400	5.163	0.154	232.200	1.200	89.479	0.462	355.400	3.400	136.955	1.310
February	2274.176	82.53	0.529	36.289	0.232	12.470	0.588	5.483	0.258	14.941	0.659	6.569	0.077	12.176	1.176	5.354	0.517	0.529	None.	0.232	None.	11.058	0.647	4.862	0.310	230.529	0.941	101.368	0.413	364.235	4.117	160.161	1.810
March	2635.000	104.235	0.706	39.558	0.267	11.235	0.353	4.263	0.134	15.882	0.059	6.029	0.022	10.882	0.529	4.130	0.200	1.058	0.353	0.401	0.133	13.235	0.529	5.023	0.200	276.176	1.529	104.813	0.580	432.705	4.059	164.218	1.540
April	2723.470	131.882	1.294	48.424	0.475	13.000	0.588	4.773	0.215	20.529	0.470	7.537	0.178	12.411	0.823	4.557	0.302	6.941	1.941	2.548	0.712	14.235	0.823	5.226	0.302	259.882	1.353	95.423	0.496	458.882	7.294	168.491	2.678
May	2714.117	168.235	1.882	61.963	0.693	13.059	0.176	4.811	0.065	36.235	0.294	13.307	0.108	17.235	1.294	6.350	0.476	14.941	4.705	5.504	1.733	16.647	0.941	6.131	0.346	292.117	1.882	107.628	0.693	552.470	11.176	205.721	4.117
June	2794.235	184.764	0.882	66.123	0.315	14.000	0.647	5.010	0.231	52.529	0.470	18.799	0.168	26.176	1.470	9.367	0.526	10.764	2.588	3.852	0.926	14.176	0.823	5.073	0.294	291.941	1.000	104.479	0.357	594.353	7.882	212.706	2.820
July	2816.176	159.176	1.353	55.812	0.480	18.235	0.353	6.474	0.125	74.235	0.823	26.362	0.292	50.470	2.941	17.921	1.044	12.411	4.294	4.407	1.524	15.294	0.588	5.430	0.208	297.647	1.353	105.879	0.480	626.000	11.705	222.287	4.156
August	2910.647	119.294	1.647	40.985	0.565	16.235	0.294	5.577	0.101	50.294	0.470	17.279	0.161	41.470	2.647	14.247	0.909	6.823	2.294	2.344	0.788	12.294	0.905	4.223	0.242	292.294	1.529	100.422	0.525	538.706	9.588	185.081	3.294
September	2995.235	115.176	1.647	38.453	0.550	14.764	0.647	4.941	0.215	36.527	0.706	12.195	0.235	22.706	1.882	7.580	0.628	2.588	0.823	0.864	0.274	13.058	0.941	4.359	0.314	303.588	1.529	101.352	0.510	508.412	8.196	169.744	2.729
October	2930.300	142.823	1.588	48.735	0.542	15.059	0.294	5.139	0.100	32.411	0.470	11.060	0.160	18.000	2.058	6.142	0.702	1.294	0.176	0.441	0.060	11.117	0.647	3.613	0.220	295.705	1.353	100.913	0.461	516.412	6.588	176.040	2.248
November	2843.764	179.588	3.000	63.151	1.054	13.647	0.294	4.798	0.103	24.706	0.353	8.687	0.124	14.706	1.588	5.171	0.558	0.705	0.176	0.248	0.062	8.470	0.294	2.978	0.103	245.058	1.000	86.174	0.351	486.882	6.705	171.210	2.358
December	2676.411	142.647	2.059	53.297	0.769	10.235	0.353	3.824	0.131	23.764	0.353	8.879	0.131	21.294	3.235	7.956	1.208	1.176	0.470	1.186	0.175	10.470	0.941	3.912	0.351	231.882	0.764	86.639	0.284	443.470	8.176	165.695	3.055
Total for the Year	2742.377	1699.950	18.007	579.610	6.481	166.739	4.987	60.796	1.832	397.653	5.127	142.713	1.648	257.126	19.043	92.474	7.070	59.272	17.820	22.104	6.387	153.454	8.479	55.993	3.044	3249.019	15.433	1184.569	5.612	5877.927	88.886	2138.309	32.115

TABLE C.

BELGAUM.

Table of the Sickness and Mortality among the European Troops (Queen's and Company's) stationed at Belgaum, between the Years 1830 *and* 1846 : *showing the Average Number of Admissions and Deaths, and the Ratio of Admissions and Deaths to Strength, from the principal Diseases, for each Month throughout the Year.*

		Average Strength.	Fevers.				Pulmonic Affections.				Diarrhœa.				Dysentery.				Cholera.				Hepatic Affections.				Other Diseases.				Total.			
			Average number of Admissions.	Average number of Deaths.	Ratio of Admissions per 1000 of Strength.	Ratio of Deaths per 1000 of Strength.	Average number of Admissions.	Average number of Deaths.	Ratio of Admissions per 1000 of Strength.	Ratio of Deaths per 1000 of Strength.	Average number of Admissions.	Average number of Deaths.	Ratio of Admissions per 1000 of Strength.	Ratio of Deaths per 1000 of Strength.	Average number of Admissions.	Average Number of Deaths.	Ratio of Admissions per 1000 of Strength.	Ratio of Deaths per 1000 of Strength.	Average number of Admissions.	Average Number of Deaths.	Ratio of Admissions per 1000 of Strength.	Ratio of Deaths per 1000 of Strength.	Average number of Admissions.	Average number of Deaths.	Ratio of Admissions per 1000 of Strength.	Ratio of Deaths per 1000 of Strength.	Average Number of Admissions.	Average number of Deaths.	Ratio of Admissions per 1000 of Strength.	Ratio of Deaths per 1000 of Strength.	Average number of Admissions.	Average number of Deaths.	Ratio of Admissions per 1000 of Strength.	Ratio of Deaths per 1000 of Strength.
An Average of 5 years—1830, 1832, 1834, 1835, and 1836.	January	879.200	26·000	0.400	29.572	0.454	4·600	0.400	5.232	0.454	5.800	....	6.596	....	6.200	0.400	7.051	0.454	0.200	....	0.227	....	8.600	0.200	9.779	0.227	60.000	0.600	68.243	0.682	114.400	2.000	126.706	2.274
	February	883.900	29.300	0.100	33.148	0.113	5.200	0.200	5.883	0.226	4.100	....	4.638	....	9.700	0.700	10.974	0.791	0.200	....	0.226	....	6.800	0.200	7.670	0.226	55.500	0.400	62.789	0.452	110.800	1.600	125.355	1.810
	March	901.200	27.600	0.300	30.625	0.332	7.200	0.300	7.989	0.332	2.400	....	2.663	....	9.200	0.500	10.208	0.553	....	....	....	....	8.100	0.300	8.988	0.332	71.700	0.200	79.560	0.221	126.200	1.600	140.035	1.775
	April	907.800	34.100	0.400	37.563	0.440	5.800	....	6.389	....	3.500	....	3.855	....	14.000	1.000	15.421	1.101	0.600	....	0.660	....	10.400	0.200	11.456	0.220	65.800	0.300	72.482	0.330	134.200	1.900	147.829	2.092
	May	906.700	36.200	0.700	39.063	0.755	6.300	0.100	6.776	0.107	7.200	....	7.769	....	13.700	1.200	14.783	1.294	0.400	0.100	0.431	0.107	8.900	....	9.603	....	75.300	0.300	81.256	0.215	148.000	2.400	159.706	2.481
An Average of 10 years,—1830, 1831, 1832, 1833, 1834, 1835, 1836, 1837, 1843, and 1846.	June	918.600	35.500	0.200	38.645	0.217	5.100	0.100	5.551	0.108	5.700	0.200	6.205	0.217	16.400	1.400	17.853	1.524	0.500	0.200	0.544	0.217	11.100	0.400	12.083	0.435	64.900	0.200	70.650	0.217	139.200	2.700	151.534	2.939
	July	917.800	34.000	0.200	37.045	0.217	5.900	0.100	6.428	0.108	5.800	0.200	6.319	0.217	18.900	1.200	20.592	1.307	0.700	0.600	0.762	0.654	9.800	0.500	10.677	0.554	63.900	0.600	69.623	0.654	139.000	3.400	151.449	3.704
	August.....	914.000	28.100	0.200	30.743	0.218	7.700	0.300	8.424	0.328	2.800	....	3.063	....	16.800	1.600	18.380	1.750	....	....	....	....	10.200	0.200	11.159	0.218	58.200	0.500	63.676	0.547	123.800	2.800	135.448	3.063
	September ..	895.900	27.600	0.300	30.807	0.334	6.200	....	6.920	....	2.300	0.100	2.567	0.111	8.600	0.600	9.598	0.669	0.100	....	0.111	....	8.000	0.500	8.929	0.548	56.400	0.200	62.962	0.223	109.200	1.700	121.922	1.919
	October	858.700	34.700	0.300	40.409	0.349	4.000	0.100	4.658	0.116	2.500	....	2.901	....	10.500	0.700	12.226	0.815	1.500	0.300	1.746	0.349	10.300	0.300	11.994	0.349	66.000	0.300	76.860	0.349	129.500	2.000	150.809	2.329
	November ..	869.800	42.300	0.800	48.631	0.919	10.000	0.100	11.496	0.114	2.100	0.100	2.414	0.114	7.800	0.300	8.967	0.344	1.700	1.000	1.954	1.149	6.100	....	7.013	....	53.900	0.100	61.968	0.114	123.900	2.400	142.446	2.759
	December...	919.700	34.400	0.400	37.403	0.434	6.400	....	6.958	....	3.100	....	3.370	....	7.800	0.500	8.481	0.543	....	....	....	None.	6.500	0.300	7.067	0.326	61.700	0.200	67.087	0.217	119.900	1.400	130.368	1.522
Total for the Year.....		897.775	389.800	4.300	433.654	4.782	74.400	1.700	82.704	1.893	47.300	0.600	52.360	0.659	142.600	10.100	154.534	11.145	5.900	2.200	6.661	2.476	104.800	3.100	116.418	3.435	752.300	3.900	837.156	4.221	1515.100	25.900	1683.607	28.667

TABLE D.

DEESA.

Table of the Sickness and Mortality among the European Troops (Queen's and Company's) stationed at Deesa, between the years 1830 *and* 1846: *showing the Average Number of Admissions and Deaths, and the Ratio of Admissions and Deaths to Strength, from the principal Diseases, for each Month throughout the Year.*

		Average Strength.	Fevers.				Pulmonic Affections.				Diarrhœa.				Dysentery.				Cholera.				Hepatic Affections.				Other Diseases.				Total.			
			Average number of Admissions.	Average number of Deaths.	Ratio of Admissions per 1000 of Strength.	Ratio of Deaths per 1000 of Strength.	Average number of Admissions.	Average number of Deaths.	Ratio of Admissions per 1000 of Strength.	Ratio of Deaths per 1000 of Strength.	Average number of Admissions.	Average number of Deaths.	Ratio of Admissions per 1000 of Strength.	Ratio of Deaths per 1000 of Strength.	Average number of Admissions.	Average number of Deaths.	Ratio of Admissions per 1000 of Strength.	Ratio of Deaths per 1000 of Strength.	Average number of Admissions.	Average number of Deaths.	Ratio of Admissions per 1000 of Strength.	Ratio of Deaths per 1000 of Strength.	Average number of Admissions.	Average number of Deaths.	Ratio of Admissions per 1000 of Strength.	Ratio of Deaths per 1000 of Strength.	Average number of Admissions.	Average number of Deaths.	Ratio of Admissions per 1000 of Strength.	Ratio of Deaths per 1000 of Strength.	Average number of Admissions.	Average number of Deaths.	Ratio of Admissions per 1000 of Strength.	Ratio of Deaths per 1000 of Strength.
An Average of 8 years	January	850.500	16.750	0.250	19.694	0.293	6.000	....	7.054	....	4.125	....	4.850	....	6.125	0.625	7.201	0.734	....	....	....	....	1.500	....	1.763	....	43.625	0.375	51.293	0.440	78.125	1.250	91.857	1.469
An Average of 17 years, from 1830 to 1846, inclusive.	February	921.117	18.176	0.176	19.733	0.191	2.882	0.117	3.129	0.127	4.176	....	4.534	....	5.529	0.294	6.002	0.319	0.117	0.058	0.127	0.063	2.647	0.294	2.873	0.191	63.882	0.765	69.353	0.830	97.611	1.588	105.755	1.724
	March	946.706	24.882	0.235	26.289	0.248	4.000	0.294	4.225	0.310	3.941	0.176	4.163	0.186	6.000	0.294	6.337	0.372	0.058	....	0.062	....	4.353	0.058	4.596	0.062	73.823	0.353	77.976	0.372	117.058	1.470	123.648	1.553
	April	956.000	27.764	0.353	29.042	0.369	4.235	0.176	4.430	0.184	5.647	0.058	5.906	0.061	3.294	0.235	3.445	0.246	0.294	....	0.307	....	3.235	0.117	3.384	0.123	73.353	0.470	76.739	0.492	117.823	1.411	123.246	1.476
	May	958.235	40.882	0.941	42.651	0.981	5.353	0.176	5.584	0.184	5.000	0.058	5.216	0.061	5.235	0.353	5.461	0.368	0.353	0.058	0.368	0.061	3.470	0.117	3.620	0.122	67.176	0.764	70.082	0.797	127.470	2.470	132.985	2.577
	June	961.411	59.294	1.176	61.673	1.223	4.823	0.176	5.017	0.183	4.470	0.117	4.650	0.122	5.058	0.294	5.261	0.305	0.176	0.058	0.183	0.061	3.882	0.176	4.038	0.183	84.588	1.000	87.983	1.040	162.294	3.000	168.808	3.120
	July	957.529	56.882	0.235	59.405	0.245	5.294	0.058	5.528	0.061	6.235	....	6.515	....	6.588	0.058	6.880	0.184	1.117	0.117	1.167	0.122	3.705	....	3.870	....	87.411	0.353	91.288	0.368	167.235	0.941	174.652	0.982
	August	938.058	58.588	0.470	62.456	0.502	4.294	....	4.577	....	9.941	....	10.597	....	13.941	0.235	14.861	0.250	0.706	0.176	0.752	0.188	3.411	0.353	3.637	0.376	83.823	0.470	89.360	0.507	174.705	1.705	186.242	1.818
	September ..	943.294	70.411	2.529	74.644	2.681	2.764	0.235	2.930	0.249	8.882	0.235	9.416	0.249	9.705	0.117	10.289	0.124	0.764	0.470	0.810	0.498	3.235	0.647	3.492	0.685	80.353	9.519	85.183	0.562	176.176	4.764	186.767	5.051
	October	914.176	97.764	2.647	106.942	2.895	4.000	0.058	4.375	0.064	5.353	0.117	5.855	0.128	5.823	0.588	6.370	0.643	0.117	0.058	0.128	0.064	2.000	0.764	2.187	0.836	64.588	0.470	70.651	0.578	178.470	4.470	196.512	5.212
	November ..	907.470	52.647	2.411	58.015	2.657	2.058	0.117	2.268	0.129	3.470	0.117	3.824	0.129	7.647	0.588	8.426	0.648	0.058	0.058	0.064	0.064	1.882	0.058	2.074	0.064	67.353	0.294	74.220	0.324	135.117	3.647	148.894	4.018
	December ..	920.294	33.647	1.058	36.561	1.150	3.000	0.352	3.259	0.383	5.411	....	5.880	....	7.882	0.647	8.565	0.703	0.176	0.058	0.191	0.063	2.058	0.470	2.237	0.511	64.882	0.235	70.501	0.255	117.058	2.823	127.197	3.068
Total for the Year		931.232	557.687	12.481	597.105	13.435	48.703	1.759	52.376	1.874	66.651	0.878	71.406	0.936	82.827	4.328	89.098	4.896	3.936	1.111	4.159	1.184	35.378	3.054	37.771	3.153	854.859	6.068	914.629	6.565	1649.142	29.539	1766.563	32.068

TABLE E.

ADEN.

Table of the Sickness and Mortality among the European Troops (Queen's and Company's) stationed at Aden, between the Years 1839 *and* 1845 : *showing the Average Number of Admissions and Deaths, and the Ratio of Admissions and Deaths to Strength, from the principal Diseases, for each Month throughout the Year.*

		Average Strength.	Fevers.				Pulmonic Affections.				Diarrhœa.				Dysentery.				Cholera, Spasmodic.				Hepatic Affections.				Other Diseases.				Total.			
			Average number of Admissions.	Average number of Deaths.	Ratio of Admissions per 1000 of Strength.	Ratio of Deaths per 1000 of Strength.	Average number of Admissions.	Average number of Deaths.	Ratio of Admissions per 1000 of Strength.	Ratio of Deaths per 1000 of Strength.	Average number of Admissions.	Average number of Deaths.	Ratio of Admissions per 1000 of Strength.	Ratio of Deaths per 1000 of Strength.	Average number of Admissions.	Average number of Deaths.	Ratio of Admissions per 1000 of Strength.	Ratio of Deaths per 1000 of Strength.	Average number of Admissions.	Average Number of Deaths.	Ratio of Admissions per 1000 of Strength.	Ratio of Deaths per 1000 of Strength.	Average number of Admissions.	Average number of Deaths.	Ratio of Admissions per 1000 of Strength.	Ratio of Deaths per 1000 of Strength.	Average Number of Admissions.	Average number of Deaths.	Ratio of Admissions per 1000 of Strength.	Ratio of Deaths per 1000 of Strength.	Average number of Admissions.	Average number of Deaths.	Ratio of Admissions per 1000 of Strength.	Ratio of Deaths per 1000 of Strength.
An Average of 3 years—1840, 1841, and 1842.	January	594.600	16.000	....	26.902	....	2·000	0.333	3.363	0.560	4.000	....	6.726	....	9.333	1.666	15.695	2.802	....	....	....	....	4.333	0.333	7.286	0.560	31.666	0.285	64.013	1.121	76.600	3.000	123.318	5.044
An Average of 7 years—from 1839 to 1845, inclusive.	February	561.142	12.428	....	22.148	....	2.285	....	4.173	....	3.142	0.285	5.600	0.509	3.714	0.714	6.619	1.272	0.142	....	0.254	....	3.285	0.285	5.855	0.509	31.142	0.182	55.244	0.254	56.142	1.428	100.050	2.545
	March.....	501.571	15.285	0.142	30.475	0.284	1.571	....	3.133	....	1.428	0.142	2.853	0.284	3.714	0.428	7.405	0.854	....	....	....	....	3.857	0.142	7.690	0.284	29.571	0.142	58.928	0.284	55.428	1.000	110.509	1.993
	April	502.714	21.714	0.285	43.198	0.568	1.714	0.142	3.410	0.284	2.000	0.142	3.978	0.284	2.571	0.428	5.115	0.852	....	....	....	....	3.142	0.142	6.251	0.284	25.285	0.142	50.298	0.284	56.428	1.549	112.247	2.557
	May.....	498.000	30.571	0.571	61.388	1.147	1.428	0.142	2.868	0.286	3.142	0.142	6.310	0.286	3.000	....	6.024	....	....	....	....	....	2.285	0.142	4.589	0.286	32.571	0.714	65.404	1.434	73.000	1.714	146.586	3.442
	June.....	490.857	36.714	0.857	74.796	1.746	1.285	0.143	2.619	0.290	2.428	0.285	4.947	0.544	3.143	0.428	6.402	0.873	....	....	....	....	3.428	0.143	6.984	0.290	35.142	0.571	71.659	1.164	82.142	2.427	167.345	4.909
	July.....	488.857	25.142	0.428	51.371	0.875	1.142	....	2.335	....	2.000	....	4.086	....	3.428	0.142	7.005	0.291	....	....	....	....	2.142	0.428	4.378	0.875	28.571	0.714	58.377	1.459	59.571	1.714	127.554	3.502
	August.....	507.285	10.142	0.142	19.446	0.273	1.000	....	1.917	....	2.285	0.142	4.382	0.273	2.714	0.285	5.204	0.547	....	....	....	....	2.142	....	4.108	....	31.000	....	59.435	....	49.285	0.571	94.494	1.101
	September ..	520.857	14.000	....	26.878	....	1.000	....	1.919	....	2.857	....	5.485	....	3.714	0.285	7.131	0.548	0.142	0.142	0.274	0.274	1.571	....	3.017	....	35.142	0.571	67.471	1.097	58.429	1.000	112.177	1.919
	October	527.000	43.428	1.285	82.407	2.439	2.000	....	3.795	....	3.142	....	5.960	....	4.857	0.142	9.216	0.271	....	....	....	....	1.571	0.285	2.981	0.542	31.857	0.285	60.450	0.542	86.142	2.000	164.814	3.795
	November ..	565.000	19.142	0.285	33.881	0.505	1.142	....	2.022	....	4.142	....	7.332	....	3.714	0.571	17.193	1.011	....	....	....	....	1.857	0.285	3.286	0.505	39.285	0.571	69.532	1.011	75.285	1.714	133.249	3.034
	December.. ..	524.714	14.142	0.142	26.953	0.272	1.857	0.285	3.539	0.544	5.000	....	9.528	....	5.285	1.000	10.073	1.905	....	....	....	....	2.428	0.142	4.628	0.272	29.714	0.285	56.629	0.544	61.285	1.857	111.354	3.537
Total for the Year.....		523.549	258.708	4.137	499.843	8.109	18.424	1.045	35.093	1.964	35.566	1.138	67.187	2.180	55.187	6.089	103.082	11.226	0.284	0.142	0.528	0.274	32.041	2.327	61.053	4.407	380.946	4.462	737.440	9.194	789.737	19.974	1,503.607	37.380

Table showing the Ratio of Treated and Deaths to Strength, and Deaths to Treated, per cent. at Aden, for 7 Years—from 1839 *to* 1845, *inclusive.*

Year.	Average Strength during the Year.	Total treated.	Total died.	Ratio of treated to Strength per cent.	Ratio of Deaths to Strength per cent.	Ratio of Deaths to treated per cent.
*1839..	394.090	720	21	182.699	5.328	2.916
1840..	546.583	999	28	182.719	5.122	2.802
1841..	674.500	1278	27	189.473	4.002	2.112
1842..	641.583	1028	34	160.228	5.299	3.307
1843..	643.916	623	7	96.864	1.087	1.123
1844..	579.583	668	9	115.255	1.552	1.347
1845..	180.300	217	4	120.354	2.218	1.843

* 11 Months.